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BOTANICAL SERIES VOLUME XII

THE FORESTS AND FLORA OF BRITISH HONDURAS

BY

PAUL C. STANDLEY

ASSOCIATE CURATOR OF THE HERBARIUM, DEPARTMENT OF BOTANY

AND

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IN COOPERATION WITH

THE CONSERVATOR OF FORESTS AND THE AGRICULTURAL OFFICER OF THE COLONY

B. E. DAHLGREN
CURATOR, DEPARTMENT OF BOTANY
EDITOR

CHICAGO, U.S.A.
JANUARY 27, 1936

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FOREWORD

At the time of the organization of the Forest Department of British Honduras there was very little reliable information as to the identities of the trees and other plants with which it had to deal. With comparatively few exceptions, the trees were known, if at all, by vernacular names only, and these varied in different localities and according to whether the language spoken was English, Creole, Spanish, North Maya, South Maya, Kekchí, or Carib.

To assist the Department in overcoming this handicap, I began about ten years ago to compile a list of all of the available scientific and local names of the woody plants of the Colony. The first contribution, entitled, "Preliminary check list of British Honduras woods," was published in the initial issue of *Tropical Woods*, March, 1925. It was only a short list, but it had a fairly substantial foundation and served at least to call attention to the need for much collecting. The hearty co-operation of the foresters was secured and has been maintained, with the result that a great many names have been added to the list, numerous doubtful classifications have been cleared up, and many new species have been described. Most of the determinations of the herbarium material have been made by Mr. Paul C. Standley at Field Museum of Natural History.

Following my first visit to British Honduras in 1926, I began the issuance in typewritten form of revisions and extensions of the first check list. Each of these has been in two parts, the first containing the botanical and common names of the species arranged by families and genera, the second consisting of the common names and their botanical equivalents. Copies were sent to the Forest Department and were made the basis for further additions and corrections. Six revisions were prepared, dated as follows: No. 1, August 27, 1926; No. 2, January 1, 1927; No. 3, June 14, 1927; No. 4, November 12, 1928; No. 5, March 21, 1929; No. 6, November 1, 1929; No. 7, November 1, 1930; No. 8, June 20, 1932. A list of the common and scientific names was published in *Tropical Woods* 24: 15–28, December 1, 1930, and was five times as large as the first one printed six years previously.

The present report consists of two parts, the first on the country and the forests providing the setting for the flora which follows. Part I is compiled largely from articles and reports published in *Tropical Woods*, the *Bulletin of the Imperial Institute*, and

elsewhere. Part II has been prepared by Mr. Standley, my own share being limited to notes on the woods. The wood descriptions are short because all of the more important species have been covered more fully in *Timbers of Tropical America* or in special articles in *Tropical Woods.*

In the flora emphasis is placed on the woody vegetation, the herbs being listed only by name. It is far from complete, but I believe that making it available now will stimulate further field collections and observations necessary for filling the gaps and correcting mistakes.

SAMUEL J. RECORD

FORESTS AND FLORA OF BRITISH HONDURAS

PAUL C. STANDLEY AND SAMUEL J. RECORD
IN COOPERATION WITH
THE CONSERVATOR OF FORESTS AND THE AGRICULTURAL OFFICER OF THE COLONY

INTRODUCTION

GEOGRAPHY

British Honduras, the extreme northeastern portion of Central America, lies between 15° 53′ and 18° 30′ N. Lat. and 87° 28′ and 89° 16′ W. Long. It has an area of approximately 8,655 square miles of mainland, besides numerous small and large islands totaling about 212 square miles in area and lying from two to fifty miles from the coast. In area it is smaller than any of the Central American countries except Salvador, is about twice as large as the island of Jamaica, and of almost the same size as the State of Massachusetts.

British Honduras, the Department of Petén of Guatemala, and the Mexican states of Campeche, Yucatan, and Quintana Roo, form the Yucatan Peninsula, which projects northward from the Central American mainland, separating the Gulf of Mexico and the Caribbean Sea. A glance at a map of North America shows that this peninsula extends almost to western Cuba, and study of the area reveals that physiographically, geologically, and floristically it has much in common with that island. From a botanical standpoint the northern half of the Colony has relatively little in common with the rest of Central America.

British Honduras is divided into two approximately equal regions by the Belize River. The portion of the Colony lying north of the river is a fairly level plain, sloping gently eastward from a western elevation which rarely attains more than 400 feet above sea level. Its two principal rivers run northward and empty into Chetumal Bay, between British Honduras and Yucatan. In the southern portion, southward from the Belize River or westward from the coast, the land rises into hills, the coastal plain averaging from ten to fifteen miles in width. There are several extensive areas of elevated land and of hills or low mountains, the chief being the Cockscomb Mountains, whose principal peak, Victoria Peak, has an elevation of 3,676 feet. That the country as a whole has a considerable elevation is shown by the estimates of Mr. Lester H. Ower, Imperial Geologist, who states that about 3,000 square miles, or 36 per cent

of the Colony, including the whole of the northern region, have an elevation of 500 feet or less, but that 4,760 square miles, or 57 per cent, have an elevation of more than 1,000 feet.

GEOLOGY

Variations in the forest and the collective flora of British Honduras are influenced primarily by the topography, soil variation, and geology, and to a large extent also by the rainfall.

Recent geological sketch surveys show that two series of earth movements have been responsible for the topography of the Colony. The first (in Miocene times) and more important involved the neighboring countries and developed, in an approximately east and west direction, heavy foldings of which the central mountain mass represents an eroded anticline and the Toledo plain and the northern plain represent synclines. These are terminated in the extreme south by a high limestone escarpment thrown up by heavy faulting approximately along the Sarstoon River and in the north by the limestone hills on the Mexican side of the Río Hondo and on the west side of Booth's River in the Colony, which may represent a fault or the re-emergence of the limestone forming the anticlinal fold of Yucatan.

The second and much later folding (late Tertiary and Recent) with an approximate strike of 20 to 30 degrees east of north and the accompanying minor faulting can now be traced in the limestone coastal hills of Toledo and Manatee and in the corrugations of the northern plain, which now determine the drainage of that region.

The northern syncline was apparently submerged immediately after the first folding and the limestones which then accumulated were raised above sea level by the second folding and are now to be found covering a large area of the northern and western portions of the northern plain, the remaining area being recent alluvial deposit in the valley of the Belize River.

GEOLOGICAL DIVISIONS

The following summarized and abbreviated account of the geological divisions of the country has been taken from Ower's *Geology of British Honduras.*

Alluvial Deposits.—These cover 1,100 square miles, and except for a large area west of Belize, lying between the Belize and Sibun rivers, they form the coastal plain running between the hills and

the coast southward from Belize. They were laid down in the sea during the period when the coast line lay along the foot of the hills, and consist of material brought down by the mountain streams.

Toledo Beds.—These occupy 650 square miles south of the mountain area in the southern extremity of the Colony. They are of Upper Miocene age, consist mainly of thin bedded shales and mudstones, with some blue calcareous sandstones and patches of limestone, and lie between the alluvials of the coast and the Río Dulce limestone of the hills. Weathering of the rocks of the Toledo series results in a soil of high fertility.

Río Dulce Limestone and Marls.—The Oligocene beds to which, from their ample exposure in the gorge of the Río Dulce near Livingston, Guatemala, this name is given, cover the greater part of the Yucatan Peninsula, and are represented also in Cuba, the Cayman Islands, Jamaica, and Haiti. They cover all the northern half of British Honduras, and extend along the western and southern sides of the mountains, amounting to an area of 5,070 square miles. They consist of thick beds of hard white limestone, which often form conical peaks, frequently weathered to form caves. The limestone is not found above an elevation of 2,500 feet. The marls, which represent the younger beds of the white limestone series, are confined to the northern portion of the Colony; these are derived from the disintegration of flints and quartzite veins.

Igneous Rocks.—The granites and porphyries formed by intrusions of molten rock during Upper Carboniferous times cover irregular and often isolated areas totaling 370 square miles, of which the granites occupy 290 square miles. Such formations outcrop to form the higher hills and mountains. The detritus in the basins of the granite hills provides rich and fertile soils.

Slates.—These are also of Upper Carboniferous age and cover about 1,020 square miles. They are confined to the so-called Maya Mountains, the name given to the whole of the mountainous area, but touch the coastal plain on the east.

SOILS

The soils of the northern plain are characteristically shallow, overlying soft limestone or marl. The arenaceous soils of the watersheds support pine and a dry grass savanna and are non-agricultural. On the sites of ancient cays or on old lagoon sites where clay and silt have accumulated, a fairly deep black or brown clay is found, supporting a high forest characterized by the prevalence of Cohune.

This type is the chief agricultural soil of this region. Intermediate between these two extremes of fertility is a black or red soil, supporting forest in which Mahogany and Sapodilla are of frequent occurrence. The cutting of Mahogany and the bleeding of Sapodilla have for a long time been the principal forms of exploitation of this soil type.

The soils of the central and southern coastal plain are similar in formation to those of the northern plain, the greater part being covered by sandy detritus supporting only Pine forest and dry savanna. The alluvial belts along the rivers support a luxuriant rain forest with the characteristic Cohune palm. These soils are derived from the igneous rocks of the central mountains and are generally deeper, less clayey, and more fertile, though more acid than those of the north.

The soils of the valleys and foothills in the mountain region are characteristically deep red and fertile in the granite areas but shallow in the areas of slate, schist, and quartzite.

The soils of the southern Toledo section are fertile and deep in well-drained areas but over a large portion of the region are heavy waterlogged clays.

CLIMATE

While British Honduras lies wholly within the tropics, its climate is only sub-tropical. The humid atmosphere of the coastal plain is tempered by sea breezes and trade winds that blow for nine months of the year. Meteorological data for Belize for ten years indicate a mean shade temperature of 80° F., with a maximum of 92° F. and a minimum of 59° F.

There is a well-marked dry season from February to May. The rainfall is heaviest in the south and in the central mountain mass, and decreases rapidly toward the north, the following annual averages being recorded for stations at low altitudes or on the coast from south to north, an indication of the number of years used in determining the average also being given:

	Inches	Years
Punta Gorda	170.41	24
Kendal (10 miles inland)	96.16	3
Stann Creek	83.22	16
Belize	81.88	25
Cayo (65 miles inland)	65.55	18
Botanic Station (6 miles inland)	65.55	11
Orange Walk (30 miles inland)	56.68	20
Corozal	52.25	27

The following figures for stations on the Stann Creek Railway from the coast into the hills are also of interest, in showing the rapid rise in precipitation due to elevation:

	Inches	Years
Stann Creek (coast)	83.22	16
Agricultural Station (11 miles inland)	102.44	1
Industrial School (14 miles inland)	111.33	6
Middlesex (25 miles inland)	140.97	5

POPULATION

The census of 1931 reported that the population was 51,347 or 5.79 per square mile. The country as a whole, however, is even more sparsely inhabited than that figure would indicate, since 32.49 per cent of the population of the Colony lives in the capital, Belize, and a further 20.35 per cent in the five district townships, giving an urban population of 52.84 per cent of the total population, the remaining 47.16 per cent being distributed in the smaller villages and isolated settlements. Owing to the fact that transportation is chiefly by water, most of the population is concentrated near the coast or along the streams as far as they are navigable by motor boats or by dories, the local dugout canoes.

AGRICULTURE

H. P. SMART, AGRICULTURAL OFFICER OF BRITISH HONDURAS

Until recently agriculture has not taken the prominence in the life of the community that is usual in other countries. This may be accounted for by the fact that only lately has the urgent need for greater self-support arisen. Before this revival there was no such demand for home-grown foodstuffs as is now apparent. People were content to import the bulk of their requirements, thereby being assured of a continuous supply of produce of uniform quality at a more or less reasonable price. Such produce as was grown in the Colony was unreliable in quality and quantity.

There was no incentive to develop agricultural exports, since labor employed in the forest industry returned a far larger revenue than that obtained by a similar output of labor in the cultivation of the soil. The war and, latterly, depression following several years of over-production of timber and other forest produce of British Honduras, the growing inaccessibility of merchantable stocks of Mahogany and Cedar, and the worldwide trade stagnation have all combined to force agriculture into greater importance, thereby reducing the country's dependence on external sources of staple foods.

NATURE OF LANDS SUITABLE FOR AGRICULTURE

Agriculture as it exists today is carried on for the most part on the river side areas. The soils of these areas, except in the higher reaches, contain a very high percentage of clay and are therefore difficult to cultivate with the most common and often only implement in use—namely, the cutlass or machete. Being adjacent to waterways they are the most convenient, the average native being an excellent waterman. These lands are nothing more than narrow strips bounded on one side by water and on the other as a rule by low-lying swamps. They seldom reach a width of more than a quarter of a mile. In the north of the Colony cultivation is carried on on the Cohune cays and it is on this type of land that sugar has been grown for a hundred years or more. The cays are composed of a rich, well-drained black soil varying in depth, overlying marl.

Along the coast and on the cays plantations of coconuts are maintained. There the soil is generally of a sandy nature. In the south of the Colony, where sugar cane is also grown and where the Indian agriculture exists, the soils are mainly stiff clays and for the most part well drained.

PAST AGRICULTURE

There is evidence that parts of British Honduras were under cultivation during the period of the Maya empires and it would seem that these activities were carried on in areas which even today show the most hopeful possibilities.

It is known from records that in the seventeenth century there was a certain activity in sugar-growing for which a small number of East Indians were imported for estate work. This industry, still conducted in an extremely primitive manner, and the cultivation of coconuts have survived to a greater or less extent to the present day. During the nineteenth and the early years of the present century the Colony actually exported sugar. This, however, did not survive for very long owing to the introduction of beet sugar and the continued use of uneconomic and primitive methods of production.

Certain foodstuffs have always been cultivated by a small proportion of the population. The methods adopted, being of a shifting nature and primitive, resulted in the production of supplies totally inadequate for home demands. An exception to this is the production of the Indians, which has always been sufficient for their requirements, often leaving something over for sale. In the early days it was usual for persons employed in Mahogany works to produce

small quantities of foodstuff the bulk of which was corn (maize) for feeding the livestock used for haulage purposes.

Coconuts, although of moderately early origin as a crop in the Colony, have received more attention within the last twenty to twenty-five years than previously.

The banana industry is noteworthy as at one time it was of a comparatively flourishing nature; hopes of continued prosperity were dashed by the appearance and rapid spread of Panama Disease. There seems little possibility of restoring the industry even to its former importance since the disease has obtained too firm a hold in the easily accessible areas.

Cacao is one of the staple articles of diet among the Maya Indians. It has played its part in the agricultural history of the Colony but has never been of much commercial importance. In past years it was grown as a plantation crop on two or three estates but the entrance of cheap West African cacao on the market lowered the price to such an extent that this Colony was forced out of the market. It is interesting to note that lately the Criollo type has been recorded in the Colony (Kew Bulletin, 1930), but whether it is truly indigenous or not is not certain.

PRESENT AGRICULTURE

Agriculture at the present time, except for the cultivation of coconuts, grapefruit, and to a certain extent vegetable crops, is still of a shifting character and very primitive. Within the last few years there have been, however, definite signs of improvement in the methods of cultivation, resulting in increased production. This is attributed in part to the realization that agriculture practiced on better and improved methods is a necessity for the well-being of the Colony, and in part to the influx of agriculturists from the West Indian islands. Nevertheless, the fact that individuals are still able to obtain land far in excess of their actual requirements tends to keep alive the shifting nature of local agriculture, which under the conditions is extremely wasteful and harmful to the country. It is probable that such a state of affairs can not be remedied until the population of the Colony greatly increases.

The coconut industry is still the most important of the agricultural industries, despite the extremely poor market conditions. Both whole coconuts and copra are exported from the Colony, mainly to Canada, the United Kingdom, the United States, and Mexico. The growth of this crop is almost entirely confined to the

coastal fringe and cays, where soil and climatic conditions are most suitable. The average yearly production amounts to approximately twelve million nuts, of which from nine to ten million are exported either as whole nuts or copra.

Of late years much interest has been taken in the cultivation of grapefruit, and the British Honduras product has won the major award at the Imperial Fruit Show, England, in the years 1928 to 1931, inclusive. Although only about 500 acres at present are growing improved varieties the acreage is being increased gradually each year. So far only the Duncan and Marsh Seedless varieties are being planted, and all are propagated by budding from selected trees on sour orange and in a small number of cases native seedling stock. The planting of grapefruit actually started in 1913 when about twelve acres were set out, but it was not until about 1924 that the possibilities of expansion and export of the fruit were seriously investigated. The extension of the industry is confined for the present almost entirely to the Stann Creek Valley, but planters in other parts, notably in the Corozal District, are now showing an interest. The exports of this fruit amount to 15,000 cases per season (September to March) and it is expected that within the next four years the Colony will be shipping at least four times the quantity.

The Colony is admirably suited to the growth of certain other citrus and many of the common tropical fruits, but the limited local market and lack of enterprise in exporting such fruits have hindered their development.

Of field crops the most important need only be mentioned. These are maize, beans (*Phaseolus* spp.), cassava (*Manihot* spp.), cowpeas, rice, yams (*Dioscorea* spp.), cocos (*Xanthosoma* spp.), sweet potatoes (*Ipomoea Batatas*), and plantains (*Musa paradisiaca*). Maize and beans are the main crops of the Indians who, it may be mentioned, practice probably the highest type of agriculture that exists in the Colony at present among the non-European section of the community. Cassava and yams, although generally grown, are essentially the food crops of the Carib element, while the Creole planter grows a little of all. Recently the production of corn, rice, and beans has been encouraged by the establishment by the Government of two rice mills and two drying kilns. The increase in rice production is noteworthy, having risen from twelve tons to a hundred tons in four years. Three agricultural stations have been or are in process of being established in the main agricultural areas of the Colony in the extreme north and south, and in the center at Stann Creek.

In spite of the production of all these crops and many others, the importation of essential foodstuffs is enormous. The native planter endeavors to grow just sufficient to feed himself and his family and perhaps a little over, the sale of which will enable him to buy necessities that he is unable to produce. Unfortunately it is not always that he does produce sufficient for home consumption.

In the last few years there has been shown a progressive interest in the raising of small livestock, especially poultry. With properly organized marketing the time is not far distant when the Colony should be self-supporting in eggs and table birds.

Hog products are an important item in the diet of the bulk of the population, yet, in spite of the excellence of this country for hog-raising, the imports of salted pork and other pork products are very high. The Indians are the chief hog raisers.

Sheep are seldom to be seen, mutton being a meat not relished by the natives of the Colony.

Cattle were at one time of great importance, being the only means of draft in the forest industry. The tractor, however, has displaced the ox, resulting in the present decline in cattle-breeding. There is no milk production at all except on estates where cattle are actually kept, thus forcing the Colony to depend entirely on imported canned milk, butter, and cheese.

The improvement of the local livestock industry depends largely on the importation of good breeding animals, the establishment of cold-storage facilities, and the revival of prosperity.

FOREST PRODUCE

British Honduras, being an importer rather than an exporter of agricultural products, depends for its material welfare and balance of trade primarily upon forest products, which comprise more than three-quarters of its exports. The exports of forest produce are derived almost wholly from five trees for which this region has been long noted: Mahogany, Spanish Cedar, Sapodilla (from which chicle gum is tapped), Logwood, and Rosewood. In 1930 the exports of Mahogany and Cedar had a value of $1,007,615; Chicle, of $171,797; Logwood, of $5,130; and Rosewood, of $1,870. The only other important exports were coconuts, valued at $140,434, and bananas, at $32,087.

Historically, the forests have played an important role in the life of the Colony. The original settlement in Belize was made about

the middle of the seventeenth century by British Logwood and Mahogany cutters, the value of the forests being such that the settlement was a continual source of strife, and it was not until 1798 that the British were left in undisputed possession. The export of forest produce was the sole reason for the original and the continued settlement of the Colony.

PART I. THE FORESTS

INTRODUCTION

The importance of the forests may be gauged by their extent. The vegetation map recently compiled by the Forest Department of the Colony indicates that the vegetation of the mainland is made up of the following approximate proportions:

		Per cent
Mangrove forest		2.8
Savannas		
Brackish water savannas	Wet savannas	2.7
Fresh water savannas		
Inland savannas	Pine forest and dry savannas	15.4
Pine forest		
High rain forest		
Swamp forest		2.3
Intermediate forest		17.9
Mountain forest[1]	Advanced forest	51.9
Advanced forest		
Secondary rain forest		
High forest[2]		
Existing or recently abandoned cultivation		7.0

[1] In present stage of investigation may be included in advanced forest.

[2] The secondary forest of the Maya Empire has been included in advanced forest as it is believed that the whole of the area of the Colony except the swamps, savannas, and Pine forest was once under cultivation by the Mayas and the second growth is now again well advanced towards its apparent climax.

In 1921 Hummel reported on the forests of British Honduras, and his report, which contains an extensive account of the forests, the industries derived from them, and suggestions for a far-reaching forest policy, is still the standard work on the subject and the basis of the accepted forest policy of the Government. Oliphant, in a statement prepared for the 1928 British Empire Forestry Conference, gives a statistical estimate of the present condition of the forests of the Colony and estimates that of the Pine forest 1,836 square miles contain merchantable stocks and 1,030 square miles are unprofitable or inaccessible. Of the broad-leaved forest 1,124 square miles are unprofitable or inaccessible and 3,418 square miles contain mer-

chantable timber, that is, in respect of Mahogany, Spanish Cedar, Logwood, and Rosewood. The volume of merchantable Pine is estimated at 275 million cubic feet, and of broad-leaved species, in respect of the four trees noted above, at 20 million cubic feet. These figures are being revised, but new data are not yet available.

No definite statement is available regarding the quantity of chicle-producing trees in the Colony but figures obtained from the Forest Department indicate that in the primary forests of the northern plain, Sapodilla trees of all sizes average 11.6 trees per acre, 7.7 trees per acre being more than three feet in girth at breast height.

FOREST TYPES

The classification of the vegetation types suggested by Duncan Stevenson in Oliphant's *Forestry in British Honduras* has now been amplified by further exploration and by detailed cruising work undertaken in connection with a Forest Resources Survey. The main divisions have already been noted with estimated proportions.

MANGROVE FOREST

The Mangrove forest occurs in brackish water along the mainland and island coasts and in tidal lagoons and swamps; it is found also in depressions, previously tidal lagoons, which still retain a high degree of salinity, but where the deposition of silt has been insufficient to raise the area to the level permitting colonization by the savanna associates. The predominant species is *Rhizophora Mangle* (Red Mangrove), which forms a low covering on tidal flats, and thickets up to twelve feet in height along the sides of the drainage channels through these flats.

SAVANNA FOREST

Brackish Water Savannas.—The brackish savanna replaces the low mangrove forest as the sites on which the latter occurs are built up above the tidal limits. The soil is generally a dark-colored silt, which is colonized by a tall cyperaceous (sedge) vegetation. Common among these tussock-forming Cyperaceae are *Fuirena* and *Mariscus* species.

Fresh Water Savannas.—These savannas are fed by fresh water and are formed on the sites of inland lagoons and on the low-lying watercourses left during the meanderings of the streams and rivers through the coastal plain. These sites are populated by a cyperaceous "tussock grass" flora. *Panicum barbinode* Trin. (Para grass)

often forms a dense consociation over large areas in the riverain savannas and old watercourses. These fresh water savannas are subject to periodical inundation during the rains and to fire during the short dry season.

Inland Savannas.—The inland savannas are characterized by a shallow sandy soil overlying marl beds in the north, alluvial clay or grits in the central region and northern Toledo coastal plain, and the parent rock in the mountains of the central metamorphic region.

There are two main associations: The first is formed on the moist shallower sands of the depressions, which are subject to partial waterlogging in the rainy season, and the second colonizes the deeper sands with better drainage.

While both types support a low grass growth, the association of the moist type is predominantly cyperaceous, while that of the dryer type is largely of true grasses (Gramineae). There is a difference in the associations which each subsequently supports.

PINE FOREST

The local Pine forest forms a type that is not characteristic of Central America, except for similar areas in near-by Guatemala and certain portions of Atlantic Honduras and Nicaragua.

The colonization by *Pinus caribaea* (Pine) of the inland savannas occurring on the coarse grits and quartz beach sands derived from the metamorphic rocks of the central region has created extensive forests of this species. The colonization of the moist type has probably occurred after an intermediate stage of *Crescentia Cujete* (Calabash) and *Acoelorraphe Wrightii* (Palmetto) association. Palmetto survives in the Pine forest, which on the low-lying coastal plain is characterized by frequent *Acoelorraphe* clans. In this moist type Pine seldom exceeds eighty feet in height and in extremely moist sites height growth is often reduced to forty or fifty feet.

Pine enters the dry type apparently without such an intermediate stage and, finding its optimum habitat, attains a height growth of more than one hundred feet. Its usual associates in a scattered undergrowth are *Quercus* spp. (Oaks), *Curatella americana* (Yaha), and *Byrsonima crassifolia* (Craboo).

Pine also occurs in the Mountain Pine Ridge at elevations up to 3,000 feet and in isolated patches on the tops of other ridges between 1,000 and 3,000 feet in altitude. Its existence there, in the absence of any indication as to its mode of entry, can only be

explained by the undoubted fact that Pine is the first tree colonizer of the soils derived from the siliceous rocks.

There are numerous low shrubs of many families, and a great abundance of wiry grasses and sedges and large and small herbs. Botanically this area is attractive because of the surprising diversity of the herbaceous plants, some of which are unknown elsewhere in Central America. Many of them are species frequent in Cuba and Florida and the general aspect of the Pine forest is astonishingly similar to that of the Florida Everglades. The Pine is the same species as that which dominates the landscape of southern Florida, and the smaller plants are largely the same or closely related species. It is necessary to mention only such characteristic genera as *Polygala, Utricularia, Panicum, Paspalum, Drosera,* and *Crotalaria.*

HIGH RAIN FOREST

The high rain forest may be divided into four types according to the conditions under which it grows and its stage of development in the scale of plant succession. Much of the forest was previously thought to be primeval but it is now known that large areas were definitely cultivated in the time of the Maya Empires.

Such areas are, however, classed in the primary forests as they have now reattained or are in advanced process of reattaining an apparent climax in development. The quick return to the climax type is often due to the Maya practice of leaving the Palms, particularly Cohune (*Orbignya*), standing in their plantations. Land abandoned after shifting cultivation is quickly occupied by quick-growing short-lived trees, coarse herbs and rank shrubs, then more slowly by forest trees, and the prevalence of the Palms left standing soon gives the resultant forest the appearance of the original growth.

Swamp Forest.—The swamp forest has originated in the brackish and fresh water savannas and on the river levees in the tidal limits. It varies in constitution according to the sites which it has colonized.

The delta and flats above high tide and the river levees in the coastal plain are colonized by an association containing, first, *Laguncularia racemosa* (White Mangrove) and *Avicennia nitida* (Black Mangrove) as well as large trees of *Rhizophora Mangle* (Red Mangrove), the relics of the previous Mangrove consociation, with the later addition of *Conocarpus erecta* (Buttonwood), *Chrysobalanus Icaco* (Cocoplum), *Pachira aquatica* (Provision Tree), and *Pterocarpus officinalis* (Kaway) to form the tidal levee forest.

A palmaceous swamp forest is found in the Toledo region in a fan-shaped area around the estuary of the Temash River. Here *Manicaria saccifera* (Comfray Palm) is the predominating species, its chief associates being *Calophyllum brasiliense* var. *Rekoi* (Santa María) and *Symphonia globulifera* (Waika Chewstick).

The brackish savanna is colonized by *Acoelorraphe* and *Chrysobalanus*, with the later addition of *Bucida Buceras* (Bulletwood) and *Achras Zapota* (Sapodilla) in the northern region and *Symphonia* in the central and Toledo regions. *Calophyllum* is a commonly occurring species in this swamp forest in all three regions.

Fresh water savannas are colonized in silting lagoon areas by *Acoelorraphe* and *Chrysobalanus*, associated in the north with *Cameraria belizensis* (White Poisonwood) and *Crescentia*, and in the Toledo region with a swamp *Ficus* sp. and *Schizocardia belizensis*.

Riverain savannas subject to periodical inundation support only Prickly Bamboo and Mimosa scrub or Gob-apple (*Anona* sp.) swamp.

In the northern region in riverain and pond savannas, subject to prolonged waterlogging, *Haematoxylon campechianum* (Logwood) is found in gregarious stands.

Intermediate Forest.—The intermediate forest represents the transition stages between the swamp or Pine forest and the advanced rain forest. The associations derived from swamp forest pass through a stage containing swamp species such as *Pachira* and *Pterocarpus*, together with *Bucida* in the north, and *Podocarpus guatemalensis* (Cypress) and *Achras Chicle* (Chicle Macho) in the central and Toledo regions. *Dalbergia Stevensonii* (Rosewood) is confined to the Toledo region. Species common to these associations in all regions are *Swietenia macrophylla* (Mahogany), *Calophyllum*, *Sweetia panamensis* (Billy Webb), *Gliricidia sepium* (Madre Cacao), *Lucuma belizensis* (Silly Young), *Simaruba glauca* (Negrito), *Bursera Simaruba* (Gombolimbo), *Vochysia hondurensis* (Yemeri), *Pseudolmedia* spp. (Cherry), and *Xylopia frutescens* (Polewood).

The intermediate forest may be divided into three main associations, all known locally as "Broken Ridge," a term better rendered as "Broken Reach" as it has no reference to altitude:

(1) *Sabal–Give and Take Association.*—In the northern region the swamp and Pine forests give place to an association characterized by the frequent occurrence of *Sabal* sp. (Botán) and Give and Take Palms, together with *Achras Zapota* (Sapodilla), *Metopium Brownei* (Chechem), and *Lucuma belizensis* (Silly Young).

(2) *Terminalia-Calophyllum-Symphonia-Vochysia Association.*—In the central and Toledo regions, swamp and savanna forests, with the exception of the dry Pine forest, give place to an association whose dominants are characteristically the species which give it its name: *Terminalia excelsa* (Nargusta), *Calophyllum brasiliense* var. *Rekoi* (Santa María), *Symphonia globulifera* (Waika Chewstick), and *Vochysia hondurensis* (Yemeri).

(3) *Aspidosperma-Licania-Tetragastris Association.*—The dry Pine forest of the central region is colonized by an association containing *Aspidosperma megalocarpon* (My Lady), *Licania hypoleuca* (Pigeon Plum), and *Tetragastris Stevensonii* (Carbon) as its dominant species. The occurrence of Mountain Cabbage Palm and *Alsophila myosuroides* (Tree Fern) is characteristic of this association.

Mountain Forest.—The mountain forest on the ridges of comparatively high elevation in the central region succeeds or appears as an intermediate stage between the grass-Pine forest of the mountains and the advanced forest of the lower slopes.

The geology of the central region shows that the present mountains are the remains of a mass of metamorphic rocks intruded into the older limestones which, over the main tableland, are now completely eroded.

The mountain ridges have no apparent relation to the coastal swamps and it is therefore remarkable that the constituent genera, and in all probability the species, of the association of this intermediate type are the same as those of the fresh water savannas: Mountain Cabbage, *Schizocardia, Ficus, Calophyllum, Symphonia,* and *Podocarpus,* with *Quercus* spp. appearing as relics of the previous seral unit.

The upper limit of Cohune growth has not been determined with any certainty but has been provisionally fixed at 2,000 feet. Mountain forest occurring below this altitude must therefore be regarded as an intermediate stage in the succession to advanced forest, while above 2,000 feet it constitutes what must be considered an edaphic climax.

Advanced Forest.—This type might be called a climax as far as this term is applicable to tropical forests, in that they rarely, if ever, attain a state of equilibrium in respect of all their constituent species. The advanced forest is characterized by the prevalence of *Orbigyna Cohune* (Cohune Palm) which often forms a dense subcanopy and undergrowth and tends to oust the dicotyledonous species.

Characteristic of the advanced forest is a dense stand of lofty trees always occurring in heterogeneous associations. The nature of the foliage is often difficult to determine from the ground, and the experienced woodsman relies for his identifications on a close inspection of the trunk, wood, and general crown characteristics, and occasionally on flowers and fruits lying below the tree. In this type the growth often shows distinct stratification of foliage. Shrubs are abundant, their place being taken in the denser forest by a thick Palm growth or by a thick carpet of small ferns. Epiphytic plants such as aroids, ferns, bromeliads, mosses, and orchids abound, the aroids and coarser woody vines of higher families being particularly plentiful. Many of the trees are buttressed.

They are apparently the climatic preclimax and climax stages of the vegetation and include in their constituent species survivors from the intermediate forest as well as climax species.

Common to all regions are *Ceiba pentandra* (Cotton Tree), *Calophyllum, Terminalia, Vochysia, Calocarpum mammosum* (Mammee Apple), *Zanthoxylum* spp. (Prickly Yellow), *Spondias Mombin* (Hogplum), *Castilla elastica* (Wild Rubber), and *Ficus* species.

Confined to the limestones of the northern and Toledo regions are *Cedrela mexicana* (Cedar), and *Brosimum* spp. (Breadnut). *Virola merendonis* (Banak) and *Dialium guianense* (Ironwood) are typically trees of the central metamorphic region but are found in Toledo where the soil factor is apparently masked by that of the heavy rainfall. They are not found in the northern limestone region.

SECONDARY RAIN FOREST

The secondary advanced rain forest is the preclimax or climax unit of the cultivation subsere set up during the ancient Maya civilization.

The full extent of the Maya cultivation has not yet been determined but there is reason to believe that it has been more widespread than was formerly thought. It is, indeed, probable that all the present advanced high rain forests of the Colony are the climax units of this cultivation subsere. The process of reintroduction of Mahogany and its associates into the second-growth forest is somewhat obscure. It is surmised that the reconstitution of the forest crops took place, as far as the cultivation in the valleys of the hill limestone is concerned, by seeding from trees on the inaccessible ridges; the seeding up on the plains was no doubt from areas of swamp forest which were not suitable for cultivation.

Typical species of the early stages of second growth, as evidenced by the modern shifting cultivation of Maya Indians on the same localities, include *Ochroma bicolor* (Polak), *Belotia Campbellii* (Narrowleaf Moho), *Heliocarpus Donnell-Smithii* (Broadleaf Moho), *Schizolobium parahybum* (Quamwood), *Cecropia mexicana* (Trumpet), *Cordia alliodora* (Salmwood), *Guazuma ulmifolia* (Bay Cedar), *Miconia* spp. (Maya), *Inga* spp. (Bribri and Tama-tama), *Ceiba pentandra* (Cotton), and *Trema* sp. (Capulín). These are in the nature of transition species and do not persist long, only isolated stems being met in the later stages of the secondary rain forest. These later stages approximate to the advanced high rain forest type and the majority of species are similar in both types. *Cedrela mexicana* (Cedar) occurs scattered in supposedly primary forest but attains greater distribution in the more recent second growth. *Brosimum Alicastrum* (Breadnut) is a typical tree of the secondary forest but grows only on calcareous soils.

FORESTRY

Although British Honduras has been a timber-producing country for 250 years, systematic forestry was started only in 1922 with the formation of the Forest Department.

The administration of the Department is vested in a Forest Trust consisting of the Governor as Chairman, the Colonial Secretary, the Conservator of Forests, one other official and two non-official members appointed by the Governor. The Conservator acts as manager to the Trust.

Its policy, as laid down by Hummel, is:

(1) To improve the present condition of the forests and logging methods so that the cost of exploiting the forests will gradually become smaller to make competition in the world's market easier.

(2) To concentrate gradually the growth of Mahogany in favorably situated areas, to increase its stock and also the output.

(3) To find a market for some of the useful secondary woods.

(4) To improve communications through more systematic exploitation instead of the present hand-to-mouth system, which leaves no permanent mark of progress in the country.

The Trust also acts in the capacity of Forestry Adviser to the Government and the Forest Office as a clearing house for the dissemination of information on all aspects of forestry.

The Trust has control over its expenditure subject to the approval by the Secretary of State of its annual estimates and supplementary allocations. This financial arrangement aims at maintaining a continuous policy free from political expedients.

While its main functions are concerned with expenditure, the Forest Trust advises the Executive in matters of forest policy and collects certain classes of forest revenue.

The Forest Ordinance (No. 32 of 1926) consists of two parts, the first dealing with forest protection and control and the second constituting and defining the functions of the Forest Trust. The protective section follows the general lines of forest legislation elsewhere in the empire and permits the application of suitable provisions and rules to privately owned forest land as well as to Crown forests.

Although the object of the Trust is to procure for the Department a continuous working under a definite policy, the activities of the Department have not been isolated from economic conditions in the Colony. Thus from seven in 1927, the peak year of Mahogany production, the trained staff had been reduced by transfer and non-filling of vacancies to two in 1930, the beginning of a number of lean years in the logging industry. A third officer has recently been appointed.

The activities of the Department have followed logical lines in attempting the development of the forests.

At the outset, there was found a great lack of topographical maps and any systematic knowledge of the constitution of the forests. Records were confined to vague estimates of the volume of Mahogany and Cedar in such terms as "inexhaustible" or "plentiful." The first efforts, therefore, were directed towards topographical exploration, together with preliminary estimates of the growing stock of Mahogany, Cedar, and Sapodilla and sometimes several of the promising secondary timbers. Large areas were rapidly covered by compass traverses combined with countings of timber species.

An early recognition was made of broad vegetational types and type-mapping was included on these traverses.

This preliminary exploration is still in progress but sufficient data have now been collected to form the basis for a preliminary vegetation-type map on broad lines, and for estimating with reasonable accuracy the forest resources and agricultural possibilities of the Colony.

Intensive investigation into the forest resources was started in 1932 with the inauguration of a survey of detailed resources, the primary object being the early utilization of the so-called secondary timbers. This survey is being supplemented by tests of various timbers by the Forest Products Research Laboratory at Princes Risborough, England.

That accessible Mahogany supplies were being rapidly diminished with the advent of mechanical haulage was early realized and a long-range program of replacing Mahogany and Cedar stocks on accessible cutover areas was commenced.

Silviculture has been mainly confined to the treatment of Mahogany, Cedar, and Sapodilla, and has followed two lines. The first aims at improving the rate of growth of the younger age classes by freeing them from lianas and suppressing inferior species. The undergrowth is also opened out around "improved" trees to favor their regeneration. The object of the second is the favoring of Mahogany regeneration in its competition with inferior species.

Regeneration "improvement" methods have followed three lines:

(1) Underbrushing and opening of the canopy through selected areas to favor existing regeneration and to form a "seeding felling." This method has been used successfully on compact, heavily cutover areas.

(2) Underbrushing and opening of the canopy in favor of regeneration found around stumps of recently logged areas. It was found that, while regeneration is usually abundant around stumps during the first two years after the felling of the trees, it then rapidly disappears in the competition with inferior species in the untreated forest. This regeneration is saved, and old trees are replaced by groups of regeneration.

(3) "Taungya" work, where shifting cultivation areas are planted with Mahogany. The Toledo Indians have taken up this work, doing all the seed collection, nursery work, and transplanting of seedlings in return for the use of the land rent free.

It has been found that Mahogany regeneration can hold its own after the initial underbrushing has given it a start over secondary growth of "improved" areas.

Some 600,000 seedlings had been "improved" by methods (1) and (2) up to 1930 when retrenchment in the Department necessitated the cessation of further silvicultural work.

Silviculture in the Pine forests has been confined to fire protection, which has been found sufficient to promote abundant regenera-

tion of Pine. Small areas protected from fire since 1923 are showing encouraging results and demonstrate that the reconstitution of heavily burned and poorly stocked Pine lands is practicable.

Logging, which is confined to the extraction of Mahogany and Cedar with small quantities of Logwood and Rosewood, is all in the hands of private enterprise and is generally carried on in a haphazard manner. Loggers usually work under a license system on private and Crown lands. The Forest Department issues licenses for Crown lands and endeavors to control logging by fixing a minimum felling girth, by excluding heavily cut-over lands from logging to conserve seed-bearers, and by laying down rough felling plans for operation in the Forest Reserves.

A notable exception to the general haphazard methods of exploitation is seen on the estates of a large land-holding concern which cuts Mahogany on its own estates and is managed by a former Forest Officer. On these estates systematic felling on conservative lines is carried out.

The installation of a modern saw-mill in Belize gives the future of the forest industry a more optimistic outlook. With scientific and organized agriculture still in its infancy, the Colony must for a long time depend on its forest resources and any measures to improve their utilization must be beneficial. The growing interest in tropical hardwoods in the world's markets will lead, it is hoped, to an early exploitation of secondary timbers, which will tide the Colony over the approaching shortage of Mahogany supplies.

With agriculture organizing itself to supply the requirements in staple foodstuffs and with the early increased utilization of the forest wealth to provide the bulk of the export trade, the future prosperity of the Colony should be assured.

TIMBERS OF ECONOMIC IMPORTANCE

LOGWOOD (*Haematoxylon campechianum*)

Although Logwood has been reduced to minor commercial importance because of the competition of synthetic dyes, the early history of British Honduras is largely concerned with the "cutting, loading, and carrying away" of that timber. Gibbs (1883) says: "If, as by the adoption of her 'totem' and appropriate motto [*sub umbra floreo*], the Colony of British Honduras would appear to consider herself indebted (at all events for past prosperity) mostly to another tree [Mahogany], it is to Logwood she certainly owes in the first instance her existence.

"It was at one time the practice of the class of privateers (almost identical with buccaneers) cruising against Spanish traders to set fire to all vessels they captured which might be laden with Logwood, having first stripped them of everything valuable.

"But it so happened that a Captain James, the master of a letter of marque, having captured a Spanish vessel the cargo of which consisted of this wood, brought the ship and cargo into the Port of London. On endeavoring to dispose of the latter he was gratified as well as surprised to find for it a ready sale at an enormous price per ton. The crew, who had used up a portion of the precious freight to burn in the galley fire, had little idea that they were using fuel at a *hundred pounds* per ton during the voyage!

"The fame of this dyewood soon spread, and privateers were fitted out and dispatched to cruise off the Main, for the especial capture of Logwood-laden vessels, on their passage home to Spain from his Catholic Majesty's possessions in the 'Indies.'

"In course of time, as prizes became scarcer, protecting cruisers of the Spanish navy more abundant, the crews of the privateers found it more profitable to search for the wood on shore, cut it, and load their vessels with it.

"The yield of it is almost inexhaustible from Campeche, Honduras, and the West India Islands, as it seeds freely, and can be recut in ten to fifteen years. Its original value was £100 per ton, then £40; in 1825, £16; and it is now, 1883, quoted at £5 to £7. Its export from the Colony has been pretty uniform: 1713 to 1716, 5,740 tons; in 1824, over 4,000 tons; in 1874, 9,210 tons, and since as much as 13,000 tons in one year. Its shipment, except as the broken stowage with Mahogany logs, hardly leaves any margin for profit, but it is a favorable mode of remittance for merchants desirous of saving the exchange. It grows in soft, spongy soils. Its production for shipment requires less capital than Mahogany, and is frequently undertaken by small capitalists employing small gangs, who pay a royalty for cutting on the estates. It is generally cut the length of cordwood, three feet. It is brought down the rivers and along the coast in dories, and down the rivers in 'bark logs,' or floating cradles made of the Cabbage-palm."

The Logwood industry enjoyed a brief revival during the World War, but during the four years from 1924 to 1927 the average annual production was 563 tons, valued at £2773, eight-tenths of one per cent of the value of all forest produce. The present exports are about 125 tons—about one-third of one per cent of the total forest exports.

MAHOGANY (*Swietenia macrophylla*)

The Honduras variety of Spanish Mahogany has long been the principal article of trade, representing in statistics of recent years nearly three-quarters of the total value of produce exported from the Colony. Just when the shipping of Mahogany logs began is unknown, but "it seems unlikely that much Mahogany was cut in British Honduras before the second quarter of the 18th century." (Oliphant.) The first reference to the subject in a treaty between Great Britain and Spain appears to have been in 1786 when additional articles were added by the Convention of London to the treaty of 1783. One of these articles extended the British settlers rights to cut wood "not excepting even Mahogany."

Of the development of the industry, Gibbs (1883) writes: "Reliable returns are not procurable farther back than 1802, when 2,250,000 feet are mentioned as the quantity exported; 1803, 4,500,000 feet; 1804, 6,481,000 feet. In 1824 it had kept the same figure; in 1840 it was reduced to 4,500,000 feet, but there had been over-exportation in the few years preceding, and stocks had accumulated in the home markets—in 1837, for example, there were shipped from Belize 8,500,000 feet. The same mistake was made in 1845–46. In the first of these years the returns show 9,919,507 feet, and in 1846 the enormous increase of 13,719,075 feet. A portion of these annual quantities was wood cut outside of the limits. The depression in the years 1848, 1849, 1850, is not difficult to account for. In 1874 the quantity had come down to the old figure of about 6,000,000 feet, and in 1878 lower still, 3,146,582 feet."

In 1928, Conservator of Forests Oliphant reported on Mahogany as follows: "Originally exported to the United Kingdom in the form of squared logs, the tendency of late years has been towards shipment to the United States in the round, where the wood is converted to lumber and veneers. A substantial part of the lumber finds its way to European markets and the demand for logs in the United Kingdom is being more and more restricted to wood of the better grades and dimensions. There is a small but steadily increasing local industry producing Mahogany lumber, mainly from inferior material unsuitable for export, but inefficiency of plant and limited shipping facilities have hitherto precluded it from competing to any material extent with the highly organized lumber manufacturing industry in the United States. There are local variations in the technical characteristics of Mahogany grown on different types of soil which affect the market value of the timber within relatively

narrow limits. The wood from the poorer types of forest is much redder and harder than that found in the climax types which tends to be free-grained and Cedar-like in color and properties. The percentage of 'figured' wood varies in different localities, but figure is rarer than is commonly supposed.

"The probable duration of virgin merchantable supplies of Mahogany and Cedar is not possible to estimate with any approach to accuracy owing to lack of knowledge as to what proportion of the stock is so located as to be capable of economic working. There is a definite limit, variable according to the location of the wood and the market price level, to the distance over which Mahogany can be hauled profitably by means of tractors running on petrol. Possible developments in mechanical traction, for example, the use as a fuel of producer gas from charcoal, might materially extend this marginal limit.

"A very rough estimate of the standing stock of 'virgin' Mahogany and Cedar of merchantable size is thirty million cubic feet, which if it were all exploitable would be equivalent, at the average rate of output for the past four years, to twenty years' supply.

"Large reserves of virgin Mahogany, conservatively estimated at 160 million cubic feet, remain in the Guatemalan province of Petén, bordering the western frontier of the Colony, but the only practical means of large-scale exploitation would be by a considerable mileage of railway carried through the Colony to the coast, or to deep water on one of the larger rivers. The engineering difficulties would not be formidable, and there is little doubt that the steady suction of the market demand will draw in these supplies in time.

"Certain quantities, by no means negligible, of Mahogany and Cedar are still available from cut-over lands within the Colony, particularly from the estates on the northern plains, where the forest is of a type in which unassisted natural regeneration is fairly effective in replacing stock removed by cuttings of moderate intensity. Practically the whole of these northern forests is, however, in private ownership, and with the exception of one important group of properties, has been generally subjected to serious over-cutting, the seed-bearers left being insufficient to maintain the stock without artificial aid. The recent strong market demand led to wholesale slaughter of immature timber. Notwithstanding the depletion which has taken place, a large part of these lands could even now be restored to continuous production at relatively low cost if their owners could be induced to spend a little money on organization

and refrain from further inroads on the capital stock. Unfortunately, the circumstance that the majority of the large estates are in the hands of absentee landlords, whose interest in their properties has been limited by long tradition to the income derived from the sale of natural produce, is not conducive to progress in this direction.

"An estimate of the quantity of Mahogany and Cedar which could be produced from the cut-over lands if they were placed under regular forest management would be of questionable value without a more detailed examination of the private forest estates than it has hitherto been possible to undertake. All that can be said is that the output from the cut-over lands, together with that derived from the accessible virgin stumpage, should, with proper organization, suffice to maintain the present out-turn for some thirty or forty years, by which time the re-afforestation work now being undertaken may be expected to result in material augmentation of the supply. Much will depend on the policy followed with regard to private forest ownership. Successful tapping of the large supplies in Petén would ease the situation considerably, as the important entrepot trade thereby developed would tide the Colony over the difficult but necessary period of transition from a state of dependence on the consumption of natural resources to a self-supporting existence based on scientific production."

CEDAR (*Cedrela mexicana*)

Cedar, or Spanish Cedar, occurs and is worked in conjunction with Mahogany, to which it is closely related botanically. Its fragrantly scented, durable, easily worked timber is used locally for dugout canoes and furniture and is exported principally for boat-building and cigar boxes. It is known that the trade extends back more than a century for there is a record of 2,196 tons being shipped in 1825. During the four years from 1924 to 1927 the average exports were 46,293 cubic feet of logs, valued at £8172, or 2.6 per cent of the value of all forest produce. The export of Cedar has fallen considerably during the depression and exports of logs and lumber averaged for the three years from 1932 to 1934 only 2,234 cubic feet.

ROSEWOOD (*Dalbergia Stevensonii*)

Honduras Rosewood is one of the best-known timbers of the Colony, although the amount exported has never been very large and for the past forty years the use of the material has been confined chiefly to the making of bars for xylophones manufactured in the

United States. It has been an article of export for about a century and there is a record of 118 pieces having been shipped in 1841.

Mr. Neil S. Stevenson, in whose honor the species was named, describes the wood as follows (*Trop. Woods* 12: 1):

"It is very hard and heavy, weighing from 58 to 68 lbs. per cu. ft. when thoroughly air-dry. The heartwood is of a pinkish-brown or purplish color, with alternating light and dark zones which are independent of the true growth rings; the sapwood, which is 1 to 2 inches thick, is white with yellow vessel lines when first cut, but quickly turns yellow. The heartwood is highly durable, but the sapwood soon decays when in contact with the ground. The heart portion of a house post in use in Punta Gorda for 37 years was found to be as sound as when it was put in, but the sapwood, of course, had entirely disappeared.

"Honduras rosewood is often well figured and, though used to a limited extent for cabinet work, is chiefly employed for the bars of marimbas and xylophones manufactured in the United States. The requirements for the musical instrument trade are light-colored, straight-grained wood, in logs as nearly round as possible, hewn free of sap, mostly 4 to 6 feet in length and not less than 10 or 12 inches in diameter, although in times of shortage diameters as low as 5 inches may be taken. The exports of the timber, all to the United States, were 248 tons (valued at $5,362) in 1925, and 76 tons (valued at $2,315) in 1926." Exports for 1933 and 1934 averaged 37 tons, chiefly sent to the United Kingdom and France.

PINE (*Pinus caribaea*)

The Pine of British Honduras is the same species as the Slash Pine of southern Florida and the stands are a continuation of an irregular belt extending from Mexico through Guatemala and Honduras into Nicaragua. The local forests containing Pine trees of sufficient size and accessibility to be considered merchantable comprise a third of the mainland. The best stands are privately held and have never been exploited, except for a small area near the village of All Pines. Oliphant (1928) says: "Pine is milled on a limited scale for local consumption and has been exported successfully to adjacent republics. Inefficient plant and speculative holding of stumpage have hitherto been the chief obstacles to successful competition with the imported American Pine, which has been preferred for its better finish and availability in all convenient sizes. It is believed that *P. caribaea* would yield good rosin and turpentine,

but tapping has not yet been done on a commercial scale." A recent commercial trial shipment made to the Forest Products Research Laboratory, Princes Risborough, England, for testing has given promising results and it is possible that local milling on a larger scale than hitherto may shortly be expected.

BANAK (*Virola merendonis*)

The several species of *Virola* are widely distributed in the mainland forests of tropical America and produce uniform, easily worked timber of good quality for many purposes where resistance to decay and insect injury is not an essential. There appears to be no reason why the markets of the world should not readily absorb more of this timber than could be produced.

The following accounts of Banak, Santa María, and Yemeri, the three principal "secondary" timbers of British Honduras, are taken from an article by Duncan and Neil S. Stevenson (*Trop. Woods* 4: 12–16. 1925):

"Banak, the most important secondary timber now being exploited in British Honduras, grows fairly abundantly on granite and rich porous alluvial soils in that part of the Colony lying southward from the Sibun River. It is tolerant of shade, and makes fairly rapid growth, especially in the immediate riverain tracts. It responds quickly to girdling and rots and falls.

"Measurements of a typical, though not fully matured tree in the Sibun–Stann Creek Forest Reserve were as follows: total height, 115 feet; distance to first branch, 70 feet; girth above buttresses, 8⅓ feet; height of buttresses, 7 feet.

"The buttresses are usually not very marked, and there is generally one large spur, which, on sloping ground, is on the higher side. The trunk is straight and cylindrical and free of branches for 50 feet or more. The limbs are given off horizontally in irregular whorls and when viewed from below look like the spokes of a rimless wheel. The bark is smooth, about three-fourths of an inch thick, and, particularly in the case of trees growing on the riverain alluvium of the Sibun valley, has a decidedly red color. When the bark is wounded a dark red sap exudes, hence the Spanish name of 'sangre palo' or 'palo de sangre.'

"The wood is light-colored when freshly cut, but the surface darkens later to a red brown. The sapwood is not distinguishable from the heart. The wood resembles Spanish Cedar when manufactured and is sometimes passed off as such. It is easily worked

and, inasmuch as it splits very easily, it might make good rived shingles. It is occasionally used locally for dories, and has been employed for furniture and indoor work. Its principal commercial use is understood to be for veneers. It is not very durable for outdoor work and if so used would probably require preservative treatment.

"The freshly cut timber is very susceptible to damage by an insect, locally known as pinworm, which attacks both through the bark and exposed wood surfaces and bores deeply into the wood. The damage is materially lessened by leaving the crowns on the felled trees for some time after felling, but the only effective method of prevention so far discovered is prompt immersion of the logs in water.

SANTA MARÍA (*Calophyllum brasiliense* var. *Rekoi*)

"Santa María is a well-known timber tree throughout a large portion of the tropical American forests from Mexico and the West Indies to Brazil. Though not unknown to the export trade, it has yet to establish itself in the market.

"Santa María is probably the commonest large tree in the mixed rain forests throughout the Colony and is found on all types of soil. It attains a height of 120 feet and, except in some of the Broken Ridge country, has a clean, straight bole. A girth of 10 feet is common and individual trees measuring over 20 feet in circumference are occasionally found. Boles 50 feet in length and squaring 24 inches are common.

"Three classes of timber are recognized locally, namely, the 'white' and the 'red,' which are of a very light to pink color and floatable, and the 'dark,' which is of a reddish color and non-floatable. No way of distinguishing these classes before cutting has as yet been found.

"The wood is sometimes mistaken for Mahogany, being somewhat similar in color and often showing good figure, but it is heavier, stronger, and more lasting. On account of its durability it is used for the construction of logging trucks for hauling Mahogany and Logwood. It is also utilized for shingles, bridge stringers, trestle work and planking, beams, masts, heavy machine work, building construction, and indoor trim. It is one of the best timbers for dugouts, or dories, and gives long service. On the island of Ruatan, in the Bay Islands, it forms the principal wood for boat timbers; crooked trees are used, affording a natural bend.

"The timber ordinarily has a tendency to warp and split, unless mature and well seasoned. At a small mill on the Temash River, where fair quantities of Santa María have been cut, the sawn timber, when properly stacked in the shade, has been found to behave fairly well. Rotary veneers have been obtained which give very handsome figure, but there is a tendency to flake which has not yet been overcome. The lumber would probably make excellent flooring, particularly if a successful system of seasoning were evolved.

YEMERI (*Vochysia hondurensis*)

"The Yemeri, which is also known as Emery, Emeri, White Mahogany, and in Honduras as San Juan, grows all over the Colony, though it is rare in the New River–Northern River Tract and commonest in the south. It is typical of the transition stage from Pine Ridge to Broken Ridge and occurs extensively in the 'huamil,' or second growth on abandoned cultivation, on soils of the poorer type. It grows in almost pure stock on the sandy clay mud soils of the coast, as at Riversdale and Regalia, and in profusion on the Toledo beds, but will not grow on very swampy land. It attains large size in the Cohune Ridge, but is not as thickly stocked as the Santa María.

"A young tree measured on the Sibun–Stann Creek Forest Reserve had the following dimensions: total height, 110 feet; height to first branch, 72 feet; girth at 4½ feet from ground, 7¼ feet; height of spurs, 1½ feet.

"The habit of the tree is characteristic. Branches are given off in a manner suggesting a hand bunched up with the fingers fully extended. This is repeated throughout the crown. In the majority of cases the bark is smooth, though it may be slightly fissured when young or scaly when old. It is about half an inch thick, and upon scraping away the whitish gray membranous outer surface a characteristic yellow with white edges is exhibited.

"Two classes of timber are distinguished after felling, namely, 'white' and 'red.' The former is not lasting, dries more quickly than the other, and is difficult to work when dry on account of grittiness. It is not so hard on tools when wet and is good for inside house construction work. Red Yemeri is considered slightly less durable than Santa María, is easy to work, and is suitable for the same purposes as Poplar. It is used extensively in the south for boards and for the construction of dories."

BLACK POISON WOOD (*Metopium Brownei*)

Black Poison Wood, also known as Honduras Walnut, is a member of the family Anacardiaceae, which is the source of some beautiful furniture woods. The name Poison Wood is attributable to the presence of a caustic sap in the bark. The wood is harmless.

The species is often associated with the Sapodilla in swamp and intermediate forests on calcareous soils in the northern portions of the Colony. The heartwood is variegated, brown and reddish brown with a greenish tinge and a golden subluster so characteristic of cabinet woods. It is hard and heavy, of rather fine texture, often wavy-grained, finishes very smoothly, and takes a lustrous polish. It is more attractive in small sizes than in large panels and is suitable for articles of turnery and handles of cutlery. It is practically unknown to the trade. While the supply of the timber is not very large, it is said to exceed that of Rosewood, which is regularly exported from the Toledo District. (For further description of the wood see *Trop. Woods* 18: 28–29.)

WOODS FOR PAPER PULP

Since the mixed forests of British Honduras contain many trees with light-colored, soft to only moderately hard woods believed suitable for the manufacture of paper pulp, the Forestry Department is investigating the possibilities in that field of utilization.

REQUIREMENTS FOR WOOD PULP MILL

According to Mr. W. Raith, of the Forest Research Institute at Dehra Dun, India (*Trop. Woods* 6: 16), "before seriously considering the pulp-making properties of any woods it is advisable to investigate the manufacturing facilities available in or near the areas of growth. Unless these are suitable and economical the raw material would be of no value for this purpose. The following are essential:

"(1) Mill site with a permanent fresh water supply of not less than 40,000 gals. per hour.

"(2) Unless such site is in the immediate neighborhood of the raw material, say a radius of seven miles, water transport of the logs must be available to such site.

"(3) If coal is not available, wood fuel must be present under similar transport conditions to (2).

"(4) Lime or limestone of good quality must be present somewhere in the district, but as the amount required is small in comparison with raw material and fuel, it need not necessarily be near-by.

"(5) The mill site should either be close to a shipping port or, if distant, water transport should be available from mill to port.

"(6) The quantities required for a pulp output of 10,000 tons per annum (it is not worth while considering a smaller unit) would be approximately:

25,000 tons per annum of dry raw material.
45,000 " " " of wood fuel or
15,000 " " " of coal.
3,000 " " " of lime or
6,000 " " " of limestone.

"If these conditions are possible it may be worth while inquiring into the suitability of the raw material."

PAPER-MAKING TESTS

The Imperial Institute has reported (*Bulletin* 23: 1: 4–8) the results of tests on three British Honduras timbers; namely, Quamwood (*Schizolobium parahybum*), White Moho (*Belotia Campbellii*), and Polak (*Ochroma limonensis*). A summary of the results is given in the following table:

RESULTS OF PAPER-MAKING TESTS

(*Imperial Institute*)

NAME	PRELIMINARY EXAMINATION				
	AVERAGE LENGTH OF FIBERS	MOISTURE	ASH	CELLULOSE CONTENT	
				As received	Dry wood
	mm.	*Per cent*			
Moho, White	1.6	8.5	0.5	52.2	57.0
Polak (a)	1.8	9.3	0.8	48.9	53.9
Polak (b)	1.6	8.6	1.0	47.4	51.9
Quamwood	1.2	10.8	1.0	52.4	58.7

NAME	PAPER-MAKING TRIALS						
	CAUSTIC SODA USED		CONDITION OF DIGESTION		SODA CONSUMED PER 100 PARTS OF WOOD	YIELD OF DRY PULP IN PER CENT OF WOOD AS RECEIVED	
	Parts per 100 of wood	Parts per 100 of solution	Time	Temperature		Unbleached	Bleached
			Hours	*° C*			
Moho, White	20	4	6	160	12.7	46	41
Polak (a)	20	4	6	160	13.2	45	42
Polak (b)	30	4	7	160	17.0	43	39
Quamwood	20	4	6	160	11.0	47	42

Note: Polak wood was divided into two portions: (a) hard, (b) soft.

"The results of the investigations of these three timbers indicate that when treated under suitable conditions, Quamwood and White Moho give satisfactory yields of pulp of good strength and quality. The former can be reduced with a rather smaller consumption of soda than the latter, but, on the other hand, White Moho pulp is composed of somewhat longer fiber than the Quamwood pulp, is of rather better quality, and is more easily bleached. Both pulps would furnish paper of satisfactory quality.

"The Polak wood presents a difficulty owing to the variation in density in different parts of the trunk. The hard portion is very suitable for paper-making, giving a fairly high yield of bleached pulp which furnished white paper of good strength and quality. The soft portion of the wood, however, is not so satisfactory, as it requires a larger quantity of soda for its conversion into pulp, and the parchment-like character of the bleached pulp is a disadvantage for the production of ordinary types of paper. It would, however, be impracticable to separate the two portions for pulping on a commercial scale."

THE COHUNE PALM

The Cohune Palm (*Orbignya Cohune*) occurs extensively throughout the Colony from sea level to 1,800 feet, being at its best perhaps in the Toledo District. Mr. Neil S. Stevenson writes of it as follows (*Trop. Woods* 30: 4): "The Cohune plays an important role in the life of the forest laborer in the south of the Colony. He uses the leaves (fronds) for thatch, and the leaf stems for the sides of his house, the top of his table, and his bed. He obtains oil from the nuts and food from the heart of the 'cabbage.'

"There have been many unsuccessful attempts to utilize the nuts and kernels commercially. Some concerns failed to crack the nuts satisfactorily, while others were unable to keep their mills running with erratic collections of nuts of wild palms.

"Attention has again been focused on the commercial exploitation of this product since the Tropical Oil Products Company, Ltd., of California, commenced operations in the south of the Colony in November, 1928. After years of testing in the Republic of Honduras they evolved a machine said to be capable of giving excellent results, but, realizing that a mill can only be run economically if large supplies of nuts are readily available and accessible, their first work in British Honduras has been silvicultural in nature. They began by choosing areas of dense stocking from the lands made available to them, and proceeded to clear off all growth but Cohune.

"The Cohune Palm growing in its natural habitat, tied up with creepers and lianas and suppressed by the surrounding hardwood forest, does not generally bear fruit until its crown is free in the canopy, so that although it may be said that Cohune is plentiful in the forests it does not thereby imply that the nuts are lying on the ground in heaps several feet in depth. On the other hand, in the riverain pastures, where Cohune Palms have been left for shade purposes and freed from all other vegetative competition, each plant bears prolifically.

"A short cruise in Crown lands adjacent to the Company's property indicates that the stock of palms in raw forest is as follows:

	Per acre
Tall palms (bearing)	6.0
Medium-sized palms (bearing)	9.2
Small palms (capable of bearing)	17.8
Small palms (not immediately capable of bearing)	86.0
Total	119.0

"From the foregoing figures it is obvious then that the silvicultural treatment in freeing palms from competition should result immediately in 33 palms per acre bearing fruit, while the remaining 86 palms per acre will, in the increased light, come rapidly into bearing. There is therefore ample scope for the formation of fully stocked 'plantations' of some 40 palms per acre from the materials provided by nature. The problem now to be solved concerns the disposal of the slash produced by the fellings and in the cleaning of the second growth, which in that area of high rainfall encroaches rapidly and luxuriantly. Fire cannot be used as it hinders development where it does not kill, and it appears that intensive machete work is the only solution until the 'plantations' are reduced to what are locally termed 'Cohune pastures.'

"This silvicultural work on the Cohune has been suspended, owing to the general financial depression in the U. S. A., but it is sincerely to be hoped that better times will see the continuance of this valuable experiment. There appears to be no reason why, with such treatment, the Cohune forests of the Colony should not be made into a real commercial asset."

CHICLE GUM INDUSTRY

Sapodilla tree (*Achras Zapota*) is the source of a latex which, in coagulated form, is known as chicle, the most important source of the chewing gum of commerce. During the four years from 1924 to 1927 the average annual exports of chicle from British Hon-

duras were 152 tons, valued at £31,371, or 9.5 per cent of the value of all forest produce. Most of this gum originated in the Petén District of Guatemala, as the supplies from the forests in the Colony are nearing exhaustion as the result of unregulated tapping. The Chicle Development Company maintains an experiment station at Honey Camp (east of Orange Walk, New River) for the conservation and improvement of this important forest industry.

The present methods of tapping Sapodilla trees are described by Major H. M. Heyden (*Empire Forestry Journal* 9: 1: 107–113) as follows: "The tapping season is during the set months of the year, roughly from October to March, and it begins after the period of heaviest rain, which usually comes about mid-September. Tapping depends greatly upon climatic conditions and a dry year implies a very scanty yield of chicle.

"The natives who carry out the tapping are Spanish Indians; that is, Maya Indians with a varying admixture of Spanish blood. . . . The equipment of the chicle tapper, or 'chiclero,' as he is called, consists only of his 'machete,' which is a keen-edged cutlass with a 28-inch blade, a long coil of stout rope, a dozen small canvas bags proofed with rubber obtained locally from rubber trees (*Castilla elastica*) which grow wild in certain parts of the forest, and a few empty kerosene tins of about 3 gallons' capacity. The chicleros generally work together in parties of four or five, and they form camps in the forest, temporary shelters of sticks and palm leaves. They bring with them flour and beans sufficient to last several weeks and supplement this ration by shooting peccaries, curassow, and other small game. As their work progresses they move camp every week or ten days and thus cover large areas allotted to the contractor for whom they are working.

"The method of tapping Sapodilla differs considerably from methods used in rubber tapping, and is more analogous to the tapping of gutta-percha. There is no continuous flow as in the case of rubber, and the healing of tapping cuts and replacement of latex is extremely slow. After one day's tapping the tree is usually allowed to rest for a period of three years or more, according to the area of bark which has been cut. The method which is used generally in Central America is to make zigzag cuts in the bark, about eighteen inches apart, all the way up the tree, from about two feet above the ground to the first branch. The zigzag pattern of the cuts originates from the fact that it can easily be made with the 'machete,' which every native carries in the forest in Central America. . . . Where the

zigzag cuts have been made for more than two-thirds of the way around the stem, or where the cuts have been made too deeply, as frequently happens, the cambium is killed, the bark loosens, and the tree slowly dies. A large percentage of the mature and middle-aged Sapodilla now standing in the forests is in a moribund condition due to these causes.

"Tapping is generally done during the early part of the morning between 6 A.M. and 11 A.M. as the air is then still and humid in the forest. The latex coagulates very rapidly on exposure to sun or drying wind, and even without these adverse factors it generally ceases to flow within four to six hours from the time of cutting, so that the chicleros are usually back in their camp soon after midday with the result of their morning's work. Rain does not interfere with tapping as the extra water can easily be evaporated from the latex.

"During one morning a chiclero taps perhaps six to eight trees, hunting for these more or less in a big circle around the camp. By the time he has cut his last tree, he is able to return to the first one and remove the bag containing the latex, which will then have ceased to flow. The canvas bags containing the latex are emptied into large tins in the chicleros' camp, and when a sufficient quantity for the purpose has been collected, about 30 gallons or more, the chicle is 'cooked,' i.e., it is boiled to extract as much of the water content as possible. . . . In cooking chicle, a large open cauldron holding about 40 gallons is used, and a small wood fire is placed below it. The chicle bubbles up, giving off a cloud of steam. All through the cooking process, a man stirs the chicle with a paddle, to prevent it from scorching against the sides of the cauldron. When the moisture has been much reduced, and the chicle has become a viscous mass which can hardly be moved with the paddle, it is dumped out of the cauldron on a piece of canvas, previously rubbed with soap to prevent sticking, and there moulded into an oblong or oval block of about 20 pounds' weight. The blocks are set aside to harden for a few days, and then packed into sacks, loaded on mules, and taken to the nearest river bank, whence they are despatched by boat to the export depot in Belize, the capital town of British Honduras.

"By the method of tapping which has been described above, when the cuts have been made on one-half or less than two-thirds of the circumference of the tree, it is generally possible after an interval of about three years to make a second tapping on the remaining

area of stem, provided that the original cuts have healed well and the tree has regained vigor. After a much longer interval, another five years at least, it may be possible to do a re-tapping between the original cuts of the first tapping, but, owing to the occlusion of vessels in the bark around these old wounds, the yield of latex will be much less than from the first two tappings. Under the most favorable conditions the first tapping of a tree at about the middle point of its life may possibly yield 4–5 pounds of latex, a second tapping two pounds, and a re-tapping probably less than two pounds. Such yields are, however, things of the past in British Honduras. Practically speaking, every Sapodilla in the forests, above one foot in diameter, and a great number of smaller trees, have been tapped at least once, most of them twice, and a fair percentage have received re-tappings. This state of things is gradually becoming general in all the more accessible Sapodilla forests of Central America. In some tracts of Guatemala and Mexico there are areas which still yield well, but exhaustion can be visualized at no very distant date."

LIST OF ECONOMIC TREES AND THEIR USES

Name	Local uses	Foreign or suggested further uses
Acacia glomerosa (White Tamarind)		Furniture.
Achras Zapota (Sapodilla)	Yields chicle gum. Timber for house beams, lintels, piling, tool handles.	Timber for turnery, heavy flooring, railway ties.
Anacardium occidentale (Cashew)	Seeds edible; wine from fruits.	Cashew nut of commerce.
Anona glabra (Bobwood)	Wood for bottle stoppers.	
Andira inermis (Cabbage Bark)	Logging trucks, wheels, rolling stock parts.	
Aspidosperma megalocarpon (My Lady)	Railway ties, house frames, rafting poles, scaffolding.	
Astronium graveolens (Palo Mulato)	Cabinet work.	Furniture, turnery, cutlery handles.
Belotia Campbellii (Moho)	Bast for cordage.	Wood for box shooks, drawer sides and bottoms, etc.
Bixa Orellana (Atta)	Fruits for coloring stews, etc.	Vegetable dye for coloring foodstuffs.

Name	Local uses	Foreign or suggested further uses
Brosimum Alicastrum (Breadnut)	Leaves for fodder.	
Byrsonima crassifolia (Craboo)	Fruit for pickles.	
Bucida Buceras (Bulletwood)	Charcoal, fuel, railway ties.	
Calocarpum mammosum	Fruits edible. Timber for house frames.	
Calophyllum brasiliense (Santa María)	Furniture, joinery, railway ties, ship masts and spars, house beams, bridge beams, dugout canoes, boat timbers.	General construction and framing.
Cassipourea podantha (Water Wood)	Railway ties, house frames.	
Castilla elastica (Rubber Tree)	Yields rubber.	
Cedrela mexicana (Cedar)	Dugout canoes, boat-planking, shingles, furniture (especially chests as it is distasteful to insects).	Cabinet work, racing boats.
Ceiba pentandra (Cotton Tree)	Dugout canoes.	Wardrobes, backing for veneer, box shooks.
Chlorophora tinctoria (Fustic)	Cabinet work (inlay), dyewood.	Dyewood.
Coccoloba barbadensis (Sea Grape)	Fruits edible.	
Cordia alliodora (Salmwood)	Logging truck parts, piling and railway ties; lining of furniture and chests (as protection against insects).	Furniture.
Cordia dodecandra (Siricote)	Turnery, cabinet work.	Furniture.
Conocarpus erecta (Buttonwood)	Favorite fuel wood.	
Crescentia Cujete (Wild calabash)	Drinking vessels and dishes from the calabash.	
Curatella americana (Yaha)	Leaves as fine sandpaper.	Turnery and small articles of furniture.
Dalbergia Stevensonii (Rosewood)	Turnery, cabinet-work, marimba bars, house posts, and lintels.	Xylophone bars, cabinet work, cutlery handles.

Name	Local uses	Foreign or suggested further uses
Dialium guianense (Ironwood)	House posts, fence posts, railway ties, logging truck parts.	
Drypetes Brownii (Bullhoof)	Railway ties, house frames.	Flooring, interior trim.
Enterolobium cyclocarpum (Tubroos)	Dugout canoes.	Paneling, veneers, and cheap furniture.
Erythrina rubrinervia (Pito)	Live fence posts.	
Erythroxylon spp. (Redwood)	Railway ties, house and fence posts.	
Gliricidia sepium (Madre Cacao)	House posts, live fence posts.	
Haematoxylon campechianum (Logwood)		Dyewood.
Hirtella americana (Pigeon Plum)	Fruit edible.	
Lonchocarpus Castilloi (Black Cabbage Bark)	Logging trucks, wheels, heavy constructional work, machinery bedding, rolling stock.	Automobile spokes, coach building.
Lucuma belizensis (Silly Young)	Gum mixed with chicle. Wood for house timbers, and all tool handles.	
Matayba oppositifolia (Boy Job)	House beams and frames.	
Metopium Brownei (Black Poison Wood)	Gum used for blistering. Timber for house posts, railway ties.	Parquet, counter-tops, heavy furniture.
Nectandra spp. (Laurel)	House frames.	Furniture.
Ochroma limonensis (Polak)	Kapok for stuffing pillows, etc. Wood for razor strops and insulation.	Refrigerators, life-boat construction, airplane parts, boxes.
Orbignya Cohune (Cohune)	Nuts for cooking oil, leaves for thatching.	
Pimenta officinalis (Pimento)	Fruits for spice, leaves for tea.	Allspice of commerce.
Pinus caribaea (Pine)	Carpentry and piling, railway ties.	Pitch pine substitute.

Name	Local uses	Foreign or suggested further uses
Pithecolobium arboreum (Black Tamarind)		Furniture.
Podocarpus guatemalensis (Cypress)	House posts and sills, boat building, railway ties.	Carpentry, interior work and cheap furniture.
Protium Copal (Copal)	Gum used for incense.	
Pseudolmedia spp. (Cherry)	Cherry-like edible fruit. Railway ties.	Carpentry, interior work.
Quararibea Fieldii (Batidos)	Swizzle sticks.	
Quercus spp. (Oak)	Charcoal, truck parts, bark for tanning.	
Rhizophora Mangle (Red Mangrove)	Fuel and charcoal.	Bark for tannin.
Sabal mauritiiformis (Botán Palm)	Leaves for thatching, bole for house posts and piling, withstands teredo.	
Schizolobium parahybum (Quamwood)		Paper pulp.
Sweetia panamensis (Billy Webb)	Truck parts, wheels, cart shafts.	Coach building.
Swietenia macrophylla (Mahogany)	Furniture, boat-building and dugout canoes, interior trim.	Honduras Mahogany of commerce. Airplane propellers, speed boat hulls, cabinet work and furniture.
Symphonia globulifera (Waika Chewstick)	Boat keels, railway ties.	Vat timbers. Furniture and light fittings.
Tabebuia pentaphylla (Mayflower)	Cattle yokes.	Cabinet work.
Tabebuia sp. (Cortez)	Truck parts.	
Terminalia Hayesii (Nargusta)	Bridge timbers, rolling stock, railway ties, paneling.	Veneer, furniture.
Theobroma Cacao (Cacao)	Yields a utilizable grade of cacao.	
Thrinax argentea (Silver Thatch Palm)	Leaves for thatching.	

Name	Local uses	Foreign or suggested further uses
Trophis racemosa (White Ramón)	Leaves for fodder.	
Virola merendonis (Banak)	Interior trim.	Cedar substitute for cigar boxes, furniture, battery separators, general construction.
Vitex Gaumeri (Fiddle Wood)	Cattle yokes.	
Vochysia hondurensis (Yemeri)	Dugout canoes, furniture, interior and exterior trim.	General joinery and furniture.
Xylopia frutescens (Polewood)	Canoe and raft poles, fish spears, house frames.	
Zanthoxylum Kellermanii (Prickly Yellow)		General carpentry and furniture.

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PART II. THE FLORA

RELATIONSHIPS OF THE FLORA

The flora of the northern plains of British Honduras is typically that of the Yucatan Peninsula, the species being for the most part those that abound in Yucatan and Campeche. The flora of the southern mountains and the Toledo beds is evidently similar to that of adjacent Guatemala, a large number of species being known at present only from southern British Honduras and the Cobán region of Guatemala. The vast majority of the plants growing in British Honduras have a wide distribution along the Atlantic slope of Central America, many of them extending into southern Mexico and some into the north of South America. This, of course, is to be expected, since the country is separated by no natural barriers from the adjoining regions.

The extent of endemism in the British Honduras flora cannot be estimated at the present time, but the percentage of endemic species is probably exceedingly small. Adjacent portions of Guatemala and Yucatan are almost unexplored, and it is to be expected that most of the species now known only from British Honduras will be found later there or in more remote places, such as Honduras, or even Tabasco and Veracruz. In considering endemism it would be more logical to consider the Yucatan Peninsula as a whole, and for that area there is probably a high percentage of endemic plant species. In the *Flora of Yucatan* (Field Mus. Bot. 3: 1930) it was found that the percentage of endemic species was 17, and that ratio will doubtless hold good if the Yucatan Peninsula as a whole is considered. A large number of the species previously known only from the northern part of the Peninsula have been discovered recently in British Honduras and Petén.

Of the species of plants recorded at present from British Honduras at least 138 are known only from that country, but no doubt eventually many of them will be found outside the boundaries of the Colony. Among the more important or notable of such local species may be mentioned the following: *Heisteria Chippiana*, four species of *Inga*, four of *Pithecolobium*, *Dalbergia Stevensonii* and *D. laevigata*,

Drypetes Brownii, Calyptranthes Bartlettii, three species of *Psidium* inhabiting the Pine lands, *Mouriria cyphocarpa, Hypericum terraenovae, Buxus Bartlettii, Quiina Schippii, Licania sparsipila, Cameraria belizensis,* eleven species of Acanthaceae, *Angelonia ciliaris, Linociera oblanceolata, Strychnos Peckii,* seven Bignoniaceae, *Ipomoea aphylla,* four Utricularias, and seven trees of the Sapodilla family. Most remarkable of all, however, is the new genus, *Schizocardia,* of the family Clethraceae. Although evidently related to *Clethra,* the only other genus of the family, with species ranging from the northern United States to the southern Andes, it is strikingly distinct, and its occurrence here is of unknown significance. While first found on the mountain ridges, the species has been recently noted on the alluvial plain of Stann Creek Valley in the transitional stage between Pine and primary intermediate forests.

The close relationship of the British Honduras flora with that of adjacent Yucatan is indicated by a great number of trees and shrubs that are known only from these two political units. This is the more significant, since in Yucatan most of the collecting has been done in the northern half of the state, and the flora of the southern part can be only surmised by assigning the species collected in southern Mexico to associations indicated by the collections of the same species in the north of British Honduras. Of species confined to Yucatan and British Honduras, or sometimes ranging slightly outside these limits, there are numerous striking examples, a few of which are the following: *Acacia dolichostachya, Mimosa hemiendyta, Caesalpinia Gaumeri, Platymiscium yucatanum, Jatropha Gaumeri, Sebastiania adenophora, Byrsonima bucidifolia, Forchammeria trifoliata* (also elsewhere in Central America, but a common Yucatan species), *Serjania adiantoides, Talisia diphylla, Hampea trilobata, Vitex Gaumeri, Thevetia Gaumeri, Alseis yucatana, Asemnanthe pubescens* (an endemic genus, of one species).

Particularly important is the Logwood tree (*Haematoxylon*), which on the mainland is confined to this region, although it grows also in the West Indies. The archives of British Honduras indicate that the source of Logwood was Campeche and British Honduras. There is no reference to a Logwood-cutting industry in Jamaica until about 1672. Fawcett states that Logwood was introduced into Jamaica from British Honduras in 1715. It is probable, therefore, that Logwood is an introduced species in the West Indian islands.

The most significant element in the British Honduras flora is the West Indian. There is a large number of plants that are native

in Cuba, Jamaica, and other parts of the West Indies, but on the continent are known only from British Honduras or from the Yucatan Peninsula. Some of these species occur in southern Florida. Such a distribution, of course, is a natural one, considering the geographic proximity of Cuba, and the fact that the northern plain of British Honduras, part of Cuba, and southern Florida have similar physiographic and geologic conditions. Among species of such distribution are the following plants: *Trema floridana, Brosimum Alicastrum, Ficus laevigata, Lysiloma bahamense, Pithecolobium keyense, Caesalpinia violacea, Ateleia cubensis, Euphorbia trichotoma, Eugenia triflora, E. Fadyenii, Malpighia punicifolia, Stigmaphyllon ciliatum, Cyrilla racemiflora* (elsewhere in Mexico, also), *Suriana maritima, Drosera capillaris, Krugiodendron ferreum, Metopium Brownei, Gerardia albida, Symplocos martinicensis, Forestiera rhamnifolia, Rapanea guianensis,* and *Genlisea luteoviridis* (genus unknown elsewhere on the North American mainland). Of special interest is the local *Cameraria,* the only species outside the West Indies. *Pinus caribaea,* although ranging southward to Nicaragua, affords an outstanding example of a tree that abounds in the West Indies and Florida, but not in Mexico, except perhaps in southern Yucatan and Campeche.

Because of the lack of intensive exploration along the Atlantic coast of Central America, it is unsafe to make generalizations regarding the distribution of trees and other plants there. At the present time there are known from British Honduras many plants that grow in Panama, sometimes also in Costa Rica, but have not been found in intervening portions of the coast. Among them are *Aristolochia Chapmaniana, Pithecolobium macradenium, Cassia Killipii, Marila macrophylla, Unonopsis Pittieri, Amaioua corymbosa, Coccocypselum glabrum, Leiphaimos simplex, Parathesis aeruginosa,* and *Callichlamys latifolia.* None of these, probably, have any special significance, and all are to be expected in Honduras and Nicaragua.

More important are several definitely South American types, chiefly species of the Guianas and northern Brazil, that have been discovered in British Honduras and nowhere else in Central America. *Zollernia* includes several Brazilian species, but *Z. Tango* inhabits the forests of Honduras and British Honduras. *Amanoa grandiflora* is one of the Euphorbiaceae without close relatives in Central America. *Oocarpon torulosum* is a herbaceous plant of the Onagraceae that grows in the Guianas and also in some of the West Indies.

Quiina Schippii is the only North American representative of its family, except for a species collected recently in Panama. *Bredemeyera lucida* is a conspicuous vine of the Polygalaceae, apparently common in British Honduras, but unknown elsewhere north of the Guianas. *Psychotria axillaris* has an apparently erratic distribution along the whole course of the Andes. *Christiania africana*, collected once in British Honduras, is a showy tree known also from the Guianas, Brazil, and western Africa.

It is clear that in general the flora is what might be expected from its geographic position—predominantly Central American and Mexican. There is, however, an unexpectedly large proportion of West Indian elements, that is, West Indian plants unknown elsewhere on the mainland; many of the commoner Central American trees extend, of course, to the West Indies. There are, in addition, a number of South American species that apparently exhibit a discontinuous distribution, being found only in British Honduras and the Guiana region. The flora of British Honduras, with that of the rest of the Yucatan Peninsula, besides its more widely distributed species, contains so large a number of endemic plants that it must be considered as forming a distinct floral area, the Yucatan region, marked conspicuously by its great number of endemic Sapotaceae, as well as by restricted species of many other families.

COLLECTIONS STUDIED

The present systematic list of British Honduras plants is based primarily upon the collections in the herbarium of Field Museum of Natural History, which is believed to contain the largest series of plants of the Colony available anywhere for study. That botanical exploration of the region is incomplete is indicated by the small number of species that it is possible to report. There is no doubt that the flora of British Honduras must number at least twice as many species as are now known, but it is not believed that it ever will reach the total of 5,000 species predicted by Sprague. That figure was obtained by comparison with the flora of Jamaica. Since the area of British Honduras is twice that of Jamaica, and since continental floras are generally richer than insular ones, Sprague assumed that British Honduras must have twice as many species as Jamaica. That assumption is questionable, for although the flora of British Honduras is diversified and has unique elements, there is no reason for believing that it is particularly rich. The limestone flora is probably a meager one, to judge from neighbor-

ing areas, but the rain forest on other soils should yield many hundreds of species.

Careful inspection of the listed species will show that the trees are represented much more adequately than herbaceous plants. Note, for example, the large number of Leguminosae. They have been collected more thoroughly because of their economic importance; in fact, a great increase in their numbers is unlikely. It is evident, however, that the flora of the wet southern forest, especially as regards shrubs and herbs, has been neglected, and that of the Pine forests likewise is imperfectly represented.

In the one classic work devoted to the flora of the whole of Central America, Hemsley's *Botany* of Salvin and Godman's *Biologia Centrali-Americana*, published almost fifty years ago, there are only a few scattered references to British Honduras plants. Only of late has the Colony received much attention from botanical explorers, but the industry of recent workers has done much to improve matters.

The first extensive collection of British Honduras plants was made by Professor Morton E. Peck of the United States in 1907, in the general region of the Manatee River, where he obtained more than 800 numbers of plants. These were sent to the Gray Herbarium of Harvard University, where most of them were determined, and there is a partial set at Kew. A few numbers are represented at Field Museum. Through the kindness of Mr. C. A. Weatherby a list of Peck plants has been available in the preparation of this flora. Professor Peck discovered many new species, most of which were described by Dr. B. L. Robinson and Dr. S. F. Blake. Most of these, as well as the other species he obtained, have reappeared in recent collections, but a few of the species here enumerated are included solely on the basis of the Peck records.

The first accurate information regarding the composition of British Honduras forests was obtained by the cooperation of the Forestry Department of the Colony and the Yale School of Forestry. Extensive collections of wood and herbarium specimens of important trees were gathered by the foresters and submitted to the School of Forestry. Most of the herbarium specimens were determined by Paul C. Standley, and the woods were studied and described by Samuel J. Record, who visited the Colony in 1926 and 1930 and made additional collections. Thus for the first time it was possible to establish the identity of some of the many forest trees that had been known only by their peculiar local names, mostly terms quite meaningless elsewhere.

As this work progressed, it became apparent that the flora of British Honduras was an exceptional one in its composition, with elements unknown elsewhere along the Atlantic coast. In general, the forests of the Atlantic lowlands of Central America are fairly uniform, the same trees prevailing almost throughout its length, and extending much farther southward. Some of those trees, it is true, compose the major part of the British Honduras forests, but there are many others that extend no farther south or north. It is remarkable that the great number of West Indian—Cuban and Jamaican—species found in the Colony, do not, so far as is known, exist in Yucatan, where there is better reason for expecting them. Still more curious, and still unexplained, is the existence in British Honduras of a substantial number of Guiana species that have not been found in the intervening coast. It may be that they exist there, but fairly extensive exploration in Guatemala, Honduras, Costa Rica, and Panama has failed to detect them.

The region of Honey Camp and other parts of Orange Walk District has been explored more adequately than many parts of the Colony by three men with a special interest in certain phases of the chicle industry—Messrs. C. L. Lundell, William C. Meyer, and J. S. Karling—all of whom have made important collections of both woody and herbaceous plants. Of outstanding importance is their material of the Sapotaceae or Sapodilla family, whose center of distribution, so far as North America is concerned, lies in the Yucatan Peninsula. The work of Mr. Lundell during the winter of 1931–32 in near-by Campeche revealed a striking similarity between the flora of that previously unknown State and northern British Honduras.

One of the most extensive and significant series of plants collected in British Honduras is that of Mr. William A. Schipp, from early 1929 until the present time. His numbers, now far above a thousand, have been distributed to many herbaria of Europe and the United States. Made with discrimination, few species are repeated in the collection, which contains a high percentage of trees and other plants of the primary rain forest. The large number of new species found by Mr. Schipp has exceeded even the most sanguine expectations that the flora would yield a high percentage of at least temporarily endemic elements. A very exhaustive collection has been made in the Stann Creek District and similar intensive exploration in Toledo. Less extensive collections have been made in the Cockscomb Mountains. It should be recorded that,

in addition to his regular numbered series, Mr. Schipp has prepared another set of plants, represented, for the most part, primarily in the herbarium of Field Museum, in which the numbers are preceded by a capital S.

The collections initiated during 1931 and 1932 by Professor H. H. Bartlett and his collaborators, in the course of a biological investigation of the Maya area, by the Herbarium and Museum of Zoology of the University of Michigan, in cooperation with the Carnegie Institution of Washington, are of prime importance. During the winter of early 1931 Professor Bartlett spent some time at Uaxactún, Petén, and both before and after his work there he collected extensively in British Honduras, principally about El Cayo, but also in the Belize District. A large set of his plants, generously placed at the disposal of the writers, has added greatly to the length of this list. He submitted certain groups of his plants to specialists, and has supplied lists of their determinations, as well as duplicate specimens, thus affording still further assistance in the preparation of this report. He has submitted, also, ample collections made for him in the Corozal and Belize districts by Mr. Percy H. Gentle, a local collector. These have been peculiarly useful because of the vernacular names accompanying many of them, as well as for the additional species records that they have afforded.

The University of Michigan and Carnegie Institution explorations were continued in British Honduras by Mr. Lundell during the winter of early 1933, and the very extensive collections that he obtained in northern British Honduras (he collected also in Petén) have contributed a large amount of new information regarding the flora. The collections included some undescribed species, and many others new for the Colony or for the whole general region. Since his return to the United States, local collectors for the university, particularly Percy H. Gentle, Mercedes Chanek, and Mercedes Aguilar, have continued to prepare herbarium specimens and forward them to the university, with further increases in our knowledge of the vegetation. The very substantial lists of additional species obtained by all these collectors prove that further collecting in this and other regions of the Yucatan Peninsula will greatly extend the known flora of the area.

Except for certain groups studied by specialists, most of this recent material likewise has passed through the hands of the writers. Mr. Lundell has generously submitted lists of species determined by other botanists, thus making possible their inclusion here.

It thus appears that the cooperation of a large number of persons has contributed to the present list of species, which, while evidently incomplete, and in some portions almost ridiculously so, nevertheless affords a substantial basis for estimating the nature of the vegetation of British Honduras. Further botanical exploration in the Colony will perhaps double this pioneer list, or even increase it beyond such a figure. It is scarcely necessary to state that the mountainous area, still an almost unknown field, is the region most in need of exploration, but intensive work in almost any other part of the Colony will give profitable botanical returns. Much more representative collections should be made of all the trees of the Sapodilla family, and of the other important timber trees.

PLAN OF THE SYSTEMATIC LIST

Most of the details of the list of genera and species are sufficiently obvious to require no explanation. Since the present publication is devoted primarily to the trees of British Honduras, herbaceous plants have been listed merely by name, without citation of specimens unless the species is known from a single collection; nor have keys been provided for the genera consisting wholly of herbaceous plants. Likewise, numbered plant collections have been cited only for the trees and shrubs first described from British Honduras, or for those species of which report for the region is based on a single collection.

Citations of the place of publication have been provided only for the species based originally on British Honduras material. The general range of each woody plant has been indicated, and its range in British Honduras when possible. Unfortunately, data regarding the local distribution of trees and shrubs are usually so fragmentary that it has not been possible to indicate accurately distribution within the Colony.

COMMON NAMES

Vernacular names of three languages are cited for many of the plants listed from British Honduras. The official language of the Colony, and the one spoken by the people of British and African ancestry, is English, but there are large numbers of people, principally immigrants from Yucatan or Petén, who use the Maya language and Spanish, and many others who know only Spanish.

The local names of the plants are obtained from all three of these tongues, the Spanish and Maya names often being considerably modified from the original by the English-speaking people.

Some of the English names are exceedingly picturesque, and their derivation probably would be an interesting story. Many of the English or near-English names are those employed for the same or related plants in Jamaica and Barbados.

Unless otherwise indicated, the names cited are reported as in use in British Honduras, and many of them have been collected by the foresters. A few reported names whose use evidently was based on some misunderstanding have been omitted. There are listed, also, certain vernacular names from neighboring regions, that may well be employed in British Honduras, and there have been included numerous more or less authoritative Maya names applied to the same species in Yucatan.

There occur in literature numerous English names of British Honduras plants whose identity has not been established. A substantial service to botanical science would be performed by one who would collect the local English names, with herbarium specimens. It would be well worth while, also, to make a thorough study of the local Maya names; only a few can be reported at the present time.

ANNOTATED LIST OF GENERA AND SPECIES

OPHIOGLOSSACEAE. Adder's-tongue Family

OPHIOGLOSSUM L.

Ophioglossum macrorrhizum Kunze. Collected by Schipp; determined at Berlin. The plant is known otherwise only from southern Brazil and Argentina, and the specific name (the material has not been seen by the writer) is to be questioned.

MARATTIACEAE. Marattia Family

DANAEA J. E. Smith

Danaea elliptica J. E. Smith.

Danaea nodosa (L.) J. E. Smith.

HYMENOPHYLLACEAE. Filmy Fern Family

HYMENOPHYLLUM J. E. Smith

Hymenophyllum brevifrons Kunze (?). El Cayo District, *Bartlett* 11751.

Hymenophyllum polyanthes Swartz.

TRICHOMANES L.

Trichomanes Ankersii Park.

Trichomanes diversifrons (Bory) Mett.
Trichomanes Galeottii Fourn.
Trichomanes Godmani Hook.
Trichomanes Krausii Hook. & Grev.
Trichomanes Martinezii Rovirosa.
Trichomanes membranaceum L.
Trichomanes pinnatum Hedw.
Trichomanes polypodioides L.

GLEICHENIACEAE. Gleichenia Family

DICRANOPTERIS Bernh.

Dicranopteris pectinata (Willd.) Underw.

CYATHEACEAE. Tree Fern Family

ALSOPHILA R. Br.

Alsophila blechnoides (Rich.) Hook.

Alsophila myosuroides Liebm. Big Creek, *Schipp;* El Cayo District, *Bartlett.* A large plant, about 4.5 meters high, with a trunk 1–3 meters high and 7 cm. in diameter.

HEMITELIA R. Br.

Hemitelia multiflora (J. E. Smith) R. Br. A plant with a somewhat spiny trunk a meter high or more.

POLYPODIACEAE. Polypody Family

ACROSTICHUM L.

Acrostichum daneaefolium Langsd. & Fisch.
Acrostichum aureum L. A large coarse fern of salt marshes.

ADIANTOPSIS Fée

Adiantopsis radiata (L.) Fée.

ADIANTUM L. Maidenhair

Adiantum concinnum Willd.
Adiantum latifolium Lam.
Adiantum macrophyllum Swartz.
Adiantum obliquum Willd.

Adiantum petiolatum Desv.
Adiantum pulverulentum L.
Adiantum tenerum Swartz.
Adiantum terminatum Kunze.
Adiantum tetraphyllum Humb. & Bonpl.
Adiantum trapeziforme L.
Adiantum villosum L.
Adiantum Wilesianum Hook.
Adiantum Wilsoni Hook.

ANANTHACORUS Underw. & Maxon

Ananthacorus angustifolius (Swartz) C. Chr.

ANETIUM Splitg.

Anetium citrifolium (L.) Splitg.

ASPLENIUM L.

Asplenium abscissum Willd.
Asplenium auritum Swartz.
Asplenium cristatum Lam.
Asplenium dentatum L. Collected by Schipp; determined at Berlin.
Asplenium heterochroum Kunze.
Asplenium pteropus Kaulf.
Asplenium serratum L.

BLECHNUM L.

Blechnum indicum Burm. *B. serrulatum* L. Rich.
Blechnum occidentale L.
Blechnum fraxineum Willd.
Blechnum unilaterale Swartz.

CHEILANTHES Swartz

Cheilanthes microphylla Swartz.

COCHLIDIUM Kaulf.

Cochlidium rostratum (Hook.) Maxon.

CYCLOPELTIS J. Smith

Cyclopeltis semicordata (Swartz) J. Smith.

DIDYMOCHLAENA Desv.

Didymochlaena truncatula (Swartz) J. Smith.

DIPLAZIUM Swartz

Diplazium delitescens Maxon.

DRYOPTERIS Adans.

Dryopteris blanda (Fée) C. Chr.

Dryopteris dentata (Forsk.) C. Chr.

Dryopteris equestris (Kunze) C. Chr.

Dryopteris falcata (Liebm.) C. Chr.

Dryopteris glandulosa (Blume) Kuntze, var. **brachyodus** (Kunze) C. Chr.

Dryopteris interjecta C. Chr.

Dryopteris normalis C. Chr. *Lady Fern.*

Dryopteris obliterata (Swartz) C. Chr.

Dryopteris panamensis (Presl) C. Chr.

Dryopteris Poiteana (Bory) Urban.

Dryopteris Sprengelii (Kaulf.) Kuntze.

Dryopteris struthiopteroides C. Chr. Collected by Schipp; determined at Berlin.

Dryopteris subtetragona (Link) Maxon.

ELAPHOGLOSSUM Schott

Elaphoglossum guatemalense (Klotzsch) Moore.

Elaphoglossum longifolium (Jacq.) Smith. Collected by Schipp; determined at Berlin.

HECISTOPTERIS J. Smith

Hecistopteris pumila (Spreng.) J. Smith.

HEMIDICTYUM Presl

Hemidictyum marginatum (L.) Presl.

HEMIONITIS L.

Hemionitis palmata L.

LEPTOCHILUS Kaulf.

Leptochilus cladorrhizans (Spreng.) Maxon.

LINDSAEA Dryand.

Lindsaea falcata Dryand.
Lindsaea horizontalis Hook.
Lindsaea lancea (L.) Bedd.
Lindsaea stricta (Swartz) Dryand.

NEPHROLEPIS Schott

Nephrolepis biserrata (Swartz) Schott.
Nephrolepis cordifolia (L.) Presl.
Nephrolepis pendula (Raddi) J. Smith.

ODONTOSORIA (Presl) Fée

Odontosoria Schlechtendalii (Presl) C. Chr.

PITYROGRAMMA Link

Pityrogramma calomelaena (L.) Link.

POLYBOTRYA Humb. & Bonpl.

Polybotrya cervina (L.) Kaulf.
Polybotrya villosula Christ.

POLYPODIUM L.

Polypodium brasiliense Poir.
Polypodium ciliatum Willd.
Polypodium crassifolium L.
Polypodium decumanum Willd.
Polypodium duale Maxon.
Polypodium fallax Schlecht. & Cham.
Polypodium latum (Moore) Sodiro.
Polypodium Mitchellae Baker.
Polypodium Palmeri Maxon.
Polypodium percussum Cav.
Polypodium Phyllitidis L.
Polypodium plumula Humb. & Bonpl.
Polypodium polypodioides (L.) Watt.
Polypodium serpentinum Christ.

POLYTAENIUM Desv.

Polytaenium brasilianum (Desv.) Benedict. Big Creek, *Schipp.*
Polytaenium Feei (Schaffn.) Maxon.

PTERIDIUM Scop. Bracken

Pteridium caudatum (L.) Maxon.

PTERIS L.

Pteris biaurita L.
Pteris Kunzeana Agardh.
Pteris longifolia L.
Pteris pungens Willd.

SACCOLOMA Kaulf.

Saccoloma elegans Kaulf.
Saccoloma inaequale (Kunze) Mett.

STENOCHLAENA J. Smith

Stenochlaena recurvata (Fée) Liebm.

TECTARIA Cav.

Tectaria dilacerata (Kunze) Maxon.
Tectaria heracleifolia (Willd.) Underw.
Tectaria martinicensis (Spreng.) Copel.
Tectaria plantaginea (Jacq.) Maxon.

VITTARIA J. E. Smith

Vittaria lineata (L.) J. E. Smith.

SCHIZAEACEAE. Schizaea Family

ACTINOSTACHYS Wall.

Actinostachys Germani Fée.

ANEMIA Swartz

Anemia adiantifolia (L.) Swartz.
Anemia hirta (L.) Swartz.
Anemia pastinacaria Moritz.

LOPHIDIUM Rich.

Lophidium elegans (Vahl) Presl.

LYGODIUM Swartz

Lygodium heterodoxum Kunze.
Lygodium polymorphum (Cav.) HBK.
Lygodium volubile Swartz.

SALVINIACEAE. Salvinia Family

SALVINIA Schreb.

Salvinia auriculata Aubl. A very small aquatic plant.

LYCOPODIACEAE. Clubmoss Family

LYCOPODIUM L. Clubmoss

Lycopodium carolinianum L.
Lycopodium cernuum L.
Lycopodium dichotomum Jacq.
Lycopodium linifolium L.

SELAGINELLACEAE. Selaginella Family

SELAGINELLA Beauv.

Selaginella albonitens Spring.
Selaginella cuspidata Link.
Selaginella Galeottii Spring.
Selaginella guatemalensis Baker.
Selaginella ovifolia Baker.
Selaginella umbrosa Lem.

PSILOTACEAE. Psilotum Family

PSILOTUM Swartz

Psilotum nudum (L.) Griseb. A slender epiphyte with scale-like leaves.

ISOETACEAE. Quillwort Family

ISOETES L. Quillwort

Isoetes cubana Engelm. Honey Camp region, *Meyer* 122.

CYCADACEAE. Cycad Family

ZAMIA L.

Zamia furfuracea L. f. Stann Creek Valley, *Schipp* 81. This palm-like plant is well known in some parts of Central America

under the name *Camotillo*. Its roots, when raw, contain a deadly poison, and there is a popular belief that if they have been out of the ground two days death occurs in two days, and so on. The poisonous properties of *Zamia* roots are well known, but in some regions, particularly Florida, the cooked roots were an important article of food among the aborigines.

TAXACEAE. Yew Family

PODOCARPUS L'Hér.

Podocarpus guatemalensis Standl. *Cypress*. On hills or in mountain forest, common in the southern half of the Colony; Guatemala and southern Mexico (?). A glabrous tree 9–21 meters high, the trunk as much as 60 cm. in diameter; bark dark brown, scaly; leaves stiff, persistent, 1-nerved, alternate, linear or lance-linear; flowers of two sexes on separate trees; seed with a fleshy juicy outer coat. *Podocarpus guatemalensis* is closely related to *P. coriaceus* of the West Indies and *P. oleifolius* of Costa Rica, but it appears to be reasonably distinct from both, as characters are estimated in the genus, in the costa, which is prominent, rather than plane or impressed, on both surfaces of the leaf.

PINACEAE. Pine Family

PINUS L.

Pinus caribaea Morelet. *Pine. Pino. Huhub* (Maya). The common pine tree of this part of Central America, occurring southward to Nicaragua, and in the West Indies and Florida. A characteristic tree of the pine and cohune ridges of British Honduras and Guatemala.

Pinus oocarpa Schiede. *Pine*. Collected in British Honduras only at Baker's Pine Ridge, in pine-oak-sedge association, *Lundell* 4281. Honduras to Mexico. The leaves are longer and much more slender than those of *P. caribaea*, in bundles of 3 or 5, rather than 2 or 3. The species grows in Central America at higher elevations than *P. caribaea*.

TYPHACEAE. Cat-tail Family

TYPHA L. Cat-tail

Typha angustifolia L. *Enea* (Honduras), *Puh* (Yucatan, Maya). The leaves sometimes are employed in Central America for weaving coarse mats, and the fluff from the fruiting spikes for stuffing pillows and cushions.

POTAMOGETONACEAE. Pondweed Family

POTAMOGETON L. Pondweed

Potamogeton lucens L. Hector Creek Lagoon, Sibun River, *Gentle* 1433.

Potamogeton pectinatus L. Belize, *Lundell* 1881.

RUPPIA L.

Ruppia maritima L.

NAIADACEAE. Naias Family

NAIAS L.

Naias guadalupensis (Spreng.) Morong. Forest Home, *Schipp* 991.

ALISMACEAE. Water-plantain Family

ECHINODORUS L. Rich.

Echinodorus nymphaeifolius (Griseb.) Buchenau. Maskall Pine Ridge, *Gentle* 1109. On the North American continent this West Indian species is known only from British Honduras and Campeche.

HYDROCHARITACEAE. Hydrocharis Family

THALASSIA Solander

Thalassia testudinum Konig. Collected by Lundell. A marine plant.

TRIURIDACEAE. Triuris Family

SCIAPHILA Blume

Sciaphila picta Miers. Temash, *Schipp* S667. A small slender glabrous saprophyte, without chlorophyll, growing in moist places in deep forest.

GRAMINEAE. Grass Family

ANDROPOGON L.

Andropogon bicornis L. *Cola de venado* (Honduras).

Andropogon condensatus HBK.

Andropogon glomeratus (Walt.) BSP.

Andropogon hirtiflorus (Nees) Kunth. *A. domingensis* Hubb., non Spreng.

Andropogon leucostachyus HBK.

Andropogon Selloanus Hack.

Andropogon virgatus Desv. *A. spathiflorus* Kunth.

Andropogon virginicus L.

ANTHEPHORA Schreb.

Anthephora hermaphrodita (L.) Kuntze. *Cabeza de negro* (Honduras).

ARISTIDA L.

Aristida arizonica Vasey. *A. pseudospadicea* Hubbard, Proc. Amer. Acad. 49: 500. 1913. Type of *A. pseudospadicea* from pine ridge near Manatee Lagoon, *Peck* 31.

Aristida capillacea Lam.

Aristida divaricata Humb. & Bonpl.

Aristida laxa Cav.

Aristida Liebmannii Fourn.

ARUNDINELLA Raddi

Arundinella Berteroniana (Schult.) Hitchc. & Chase.

Arundinella Deppeana Nees.

AXONOPUS Beauv.

Axonopus ciliatifolius Swallen, Journ. Wash. Acad. Sci. 23: 458. 1933. Type from Mountain Pine Ridge, El Cayo District, *Bartlett* 11746.

Axonopus Purpusii (Mez) Chase.

Axonopus rhizomatosus Swallen. Reported by Swallen, without indication of the specific locality.

Some of the Asiatic bamboos (*Bambusa*) are planted locally, partly for ornament and partly for their large stems, which are used as building material and for innumerable other purposes.

CENCHRUS L. Sandbur

Cenchrus echinatus L. *Guisaso* (Yucatan). *Muul* (Yucatan, Maya).

Coix Lachryma-jobi L., Job's Tears, with large, white or grayish seeds, doubtless occurs as an escape. *Cymbopogon citratus* (DC.) Stapf, the Old World Lemon Grass, must be in cultivation or perhaps naturalized.

CYNODON Pers. Bermuda Grass

Cynodon Dactylon (L.) Pers. Often used as a lawn grass; native of the Old World, but now naturalized in most inhabited parts of tropical America.

DACTYLOCTENIUM Willd. Crowfoot Grass

Dactyloctenium aegyptium (L.) Willd. Naturalized from the Old World.

DIGITARIA Heist.

Digitaria horizontalis Willd. *D. setigera* Roth.

ELEUSINE Gaertn.

Eleusine indica (L.) Gaertn.

ERAGROSTIS Host

Eragrostis acutiflora (HBK.) Nees.

Eragrostis amabilis (L.) Wight & Arn.

Eragrostis ciliaris (L.) Link.

E. Elliottii Wats. is reported from Manatee Lagoon by Hubbard (Proc. Amer. Acad. 49: 501. 1913).

Eragrostis hypnoides (Lam.) BSP.

Eragrostis mexicana (Lag.) Link.

GYNERIUM Willd.

Gynerium sagittatum (Aubl.) Beauv. *Wild Cane. Caña brava* (Honduras). A tall coarse grass of swampy places. The stout stems are used for the construction of houses and for many other purposes.

HACKELOCHLOA Kuntze

Hackelochloa granularis (L.) Kuntze.

HOMOLEPIS Chase

Homolepis aturensis (HBK.) Chase.

HYMENACHNE Beauv.

Hymenachne amplexicaulis (Rudge) Nees.

ICHNANTHUS Beauv.

Ichnanthus lanceolatus Scribn. & Merr.

Ichnanthus mexicanus Fourn.

Ichnanthus pallens (Swartz) Munro.

ISCHAEMUM L.

Ischaemum latifolium (Spreng.) Kunth.

LASIACIS (Griseb.) Hitchc.

Lasiacis divaricata (L.) Hitchc. *Carrizo* (Honduras). *Zit* (Yucatan, Maya). Most of the grasses of this genus are rather large, slender vines.

Lasiacis Grisebachii (Nash) Hitchc.

Lasiacis papillosa Swallen. Honey Camp, *Lundell* 91.

Lasiacis procerrima (Hack.) Hitchc.

Lasiacis Rugelii (Griseb.) Hitchc.

Lasiacis sorghoidea (Desv.) Hitchc. & Chase.

LEERSIA Swartz

Leersia hexandra Swartz.

LEPTOCHLOA Beauv.

Leptochloa filiformis (Lam.) Beauv.

Leptochloa virgata (L.) Beauv.

LEPTOCORYPHIUM Nees

Leptocoryphium lanatum (HBK.) Nees.

LITHACHNE Beauv.

Lithachne pauciflora (Swartz) Munro.

MESOSETUM Steud.

Mesosetum angustifolium Swallen, Journ. Wash. Acad. Sci. 23: 460. 1933. *Peniculus angustifolius* Swallen, Amer. Journ. Bot. 19: 581. *f. 1.* 1932. Type from Mountain Pine Ridge, El Cayo District, *Bartlett* 11748. Endemic. The plant is the type of the genus *Peniculus* Swallen.

Mesosetum filifolium Hubbard, Proc. Amer. Acad. 49: 494. 1913. Type from pine ridge, Manatee Lagoon, *Peck* 136; Guatemala.

OLYRA L.

Olyra latifolia L.

Olyra yucatana Chase.

OPLISMENUS Beauv.

Oplismenus Burmannii (Retz.) Beauv.

Oplismenus hirtellus (L.) Beauv.

ORYZA L.

Oryza latifolia Desv.

Oryza sativa L. *Rice. Arroz.* Sometimes cultivated. Native of the Old World.

PANICUM L.

Panicum altum Hitchc. & Chase.

Panicum cyanescens Nees.

Panicum fasciculatum Swartz. *Zacate de milpa* (Honduras).

Panicum fusiforme Hitchc.

Panicum lancearium Trin.

Panicum laxum Swartz.

Panicum maximum Jacq. *Guinea Grass. Zacate de Guinea.* The most important pasture grass of Central America.

Panicum pilosum Swartz.

Panicum pulchellum Raddi.

Panicum purpurascens Raddi. *Para Grass. Zacate Pará* (Central America). *P. barbinode* Trin. Planted as a pasture grass.

Panicum Rudgei Roem. & Schult.

Panicum sphaerocarpon Ell.

Panicum stenodoides Hubbard, Proc. Amer. Acad. 49: 497. 1913. Type from low pine ridge, Icacos Lagoon, *Peck* 681; Costa Rica, Panama.

Panicum trichanthum Nees.

Panicum trichoides Swartz. *Cuhuech* (Yucatan, Maya).

PASPALUM L.

Paspalum caespitosum Flügge.

Paspalum conjugatum Berg.

Paspalum decumbens Swartz. *P. pedunculatum* Poir.

Paspalum orbiculatum Poir.

Paspalum paniculatum L.

Paspalum Peckii Hubbard, Proc. Amer. Acad. 49: 495. 1913. Type from pine ridge near Manatee Lagoon, *Peck* 71.

Paspalum pectinatum Nees.
Paspalum pulchellum Kunth.
Paspalum virgatum L.

PHARUS L.

Pharus latifolius L.

PHRAGMITES Adans. Reed

Phragmites communis Trin. *Carrizo* (Honduras). *Zachalal* (Yucatan, Maya).

SACCHARUM L.

Saccharum officinarum L. *Sugar Cane. Caña de azúcar.* Cultivated; native of the Old World.

SACCIOLEPIS Nash

Sacciolepis Myuros (Lam.) Chase.

SETARIA Beauv.

Setaria geniculata (Lam.) Beauv.
Setaria vulpiseta (Lam.) Roem. & Schult.
Setaria yucatana Herrm.

SPARTINA Schreb.

Spartina Spartinae (Trin.) Merr.

SPOROBOLUS R. Br.

Sporobolus Buckleyi Vasey.
Sporobolus cubensis Hitchc.

STENOTAPHRUM Trin. St. Augustine Grass

Stenotaphrum secundatum (Walt.) Kuntze.

THRASYA HBK.

Thrasya campylostachya (Hack.) Chase.

TRACHYPOGON Nees

Trachypogon plumosus (Humb. & Bonpl.) Nees.

TRIPSACUM L.

Tripsacum dactyloides L.

ZEA L.

Zea Mays L. *Maize, Indian Corn. Maíz. Ixim* (Maya).

CYPERACEAE. Sedge Family

CALYPTROCARYA Nees

Calyptrocarya glomerulata (Brongn.) Urban. Big Creek, *Schipp* 106.

CYPERUS L.

Cyperus articulatus L.

Cyperus cayennensis (Lam.) Britton.

Cyperus elegans L.

Cyperus ferax L. Rich. One of the commonest weeds of Central America.

Cyperus giganteus Vahl. A tall coarse plant, much like the classic papyrus of the Nile.

Cyperus Haspan L.

Cyperus humilis Kunth.

Cyperus Luzulae (L.) Retz.

Cyperus ochraceus Vahl.

Cyperus Ottonis Boeckel. Keys off the coast, *N. S. Stevenson* 160.

Cyperus paniculatus Rottb.

Cyperus rotundus L.

Cyperus surinamensis Rottb.

DICHROMENA Michx.

Dichromena ciliata Vahl.

Dichromena radicans Schlecht. & Cham.

ELEOCHARIS R. Br.

Eleocharis caribaea (Rottb.) Blake.

Eleocharis flaccida (Reichenb.) Urban.

Eleocharis interstincta (Vahl) Roem. & Schult.

Eleocharis retroflexa (Poir.) Urban.

FIMBRISTYLIS Vahl

Fimbristylis complanata (Retz.) Link.

Fimbristylis dichotoma (L.) Vahl. *F. diphylla* Vahl.

Fimbristylis spadicea (L.) Vahl.

Fimbristylis spathacea Roth. A seashore plant.

FUIRENA Rottb.

Fuirena incompleta Nees.

Fuirena umbellata Rottb.

HYPOLYTRUM L. Rich.

Hypolytrum nicaraguense Liebm. Big Creek, *Schipp* 110.

KYLLINGA Rottb.

Kyllinga brevifolia Rottb.

Kyllinga peruviana Lam.

MARISCUS Zim. Sawgrass

Mariscus jamaicensis (Crantz) Britton. *Holche* (Yucatan, Maya). The tough leaves are employed in some regions for making baskets and other articles.

RYNCHOSPORA Vahl

Rynchospora barbata (Vahl) Kunth.

Rynchospora Berterii (Spreng.) Clarke. Honey Camp, *Lundell* 687; unknown elsewhere in Central America; a West Indian plant.

Rynchospora cephalotes (L.) Vahl.

Rynchospora corymbosa (L.) Britton.

Rynchospora cyperoides (Swartz) Mart. Honey Camp.

Rynchospora divergens Curtis. Honey Camp, *Meyer* 107. Known in Central America only from this collection.

Rynchospora hirsuta Vahl. All Pines, *Schipp* 676.

Rynchospora micrantha Vahl.

SCIRPUS L.

Scirpus Olneyi Gray.

SCLERIA Berg

Scleria arundinacea Kunth.

Scleria bracteata Cav. *Sawgrass, Cutting Grass.* A common sedge, often climbing, the narrow leaves with sharp edges that cut the flesh painfully.

Scleria Liebmannii Steud. Honey Camp, *Lundell* 641.

Scleria lithosperma (L.) Swartz.

Scleria melaleuca Schlecht. & Cham. *Navajuela* (Honduras).

Scleria mitis Berg.

Scleria pterota Presl. Honey Camp.

STENOPHYLLUS Raf.

Stenophyllus tenuifolius (Rudge) Britton.

PALMAE. Palm Family

The palms, which are so easy of recognition that they need no general description here, are well represented in British Honduras, and no doubt the number of species is considerably greater than is here reported. The Central American palms have been little studied, and the species are poorly understood, consequently some of the species names employed here are questionable, and will have to be corrected. However, this is of little importance, since for most purposes it is sufficient to know merely the genus that a certain palm represents.

Leaves fan-shaped, rounded, with very numerous plaited segments.
- Petioles armed with coarse stout prickles.....*Acoelorrhaphe.*
- Petioles unarmed.
  - Leaf blades divided at the middle to the base.
    - Trunk unarmed.....*Schippia.*
    - Trunk armed with long spines.....*Cryosophila.*
  - Leaf blades not bilobed.
    - Leaf blades with a well-developed rachis extending for about half their length.....*Sabal.*
    - Leaf blades with a very short rachis or the rachis almost obsolete.
      - Fruit black; trunk with a network of fiber about the base of the leaves but without dense pads of "wool"; endosperm channeled.....*Coccothrinax.*
      - Fruit whitish; trunk with thick pads of wool-like fibers about the bases of the petioles; endosperm smooth. *Thrinax.*

Leaves pinnately parted, or sometimes wedge-shaped and cleft at the apex.

Trunk and leaves armed with spines.

Plants climbing; terminal part of the leaf rachis naked but armed with stout, abruptly reflexed spines..... *Desmoncus.*

Plants erect; leaf rachis with segments to the tip, without reflexed spines.

Staminate flowers sunken in pits in the rachis; tall solitary palms with thick trunks..... *Acrocomia.*

Staminate flowers not sunken in pits; low slender palms, usually growing in clumps or colonies.

Spines slender and needle-like..... *Bactris.*

Spines broad, compressed..... *Hexopetion.*

Trunk and leaves unarmed.

Fruit very large, usually more than 20 cm. broad..... *Cocos.*

Fruit much smaller.

Leaves with numerous perforations or "windows" near the midrib..... *Reinhardtia.*

Leaves not perforated.

Fruit covered with large pyramidal tubercles. Palms with short thick trunks and very large leaves, growing in tidal swamps; flowers of both sexes on the same spadix..... *Manicaria.*

Fruit not tubercled.

Inflorescences arising below the living leaves; tall tree-like palms.

Inflorescences once branched; trunk slender, not swollen; petals free..... *Euterpe.*

Inflorescences twice branched; trunk stout, often swollen or bulging; petals of the pistillate flowers connate at the base..... *Roystonea.*

Inflorescences arising among the living leaves, or a few of those on some plants below the leaves.

Fruit large, about 6 cm. long; plants large, with very thick trunks, the leaves several meters long. *Orbignya.*

Fruit small, rarely more than 1 cm. long; plants small and slender, with leaves rarely 2 meters long.

Flowers sunken in pits in the rachis.

Style terminal; spadix simple..... *Asterogyne.*

Style basilar or lateral; spadix simple or branched. *Geonoma.*

Flowers not sunken in the rachis.

Flowers of the two sexes on separate plants.

Petals of the staminate flowers united almost to the apex..... *Collinia.*

Petals of the staminate flowers free.

Petals of the pistillate flowers valvate; leaves simple..... *Eleutheropetalum.*

Petals of the pistillate flowers imbricate; leaves usually parted into numerous segments, sometimes simple. *Chamaedorea.*

Flowers of both sexes on the same spadix.

Branches of the spadix very long, slender, flexuous, the whole inflorescence resembling part of a broom..... *Synechanthus.*

Branches of the inflorescence rather short, stout, stiff, sharply angled.... *Reinhardtia.*

CRYOSOPHILA Blume

Cryosophila argentea Bartlett, Carnegie Inst. Wash. Publ. 461: 40. *pl. 2–5.* 1931. *Give-and-take. Escoba, Palma de escoba* (Campeche, Petén). *Akuum* (Petén, Maya). Type from Cornhouse Creek, Manatee River, Belize District, *Bartlett* 11288; Belize Pine Reserve; Corozal District; also in Petén and Campeche. The plant has been referred previously to *Acanthorrhiza aculeata* (Liebm.) Wedd. A plant of medium height, the tapering trunk covered with long spines which themselves are often covered with short spines; leaves large and fan-shaped, divided into a few broad segments, the base of the petiole splitting longitudinally in age; panicles much branched, recurved, the branches short and thick; fruits globose, about 2 cm. long. Known in Campeche by the name *Palma de Escoba.*

ACOELORRHAPHE Wendl.

Acoelorrhaphe Wrightii (Griseb.) Wendl. *Brahea psilocalyx* Burret, Notizbl. Bot. Gart. Berlin 11: 1037. 1934. *Pimenta Palm.* Stann Creek Valley and elsewhere; Cuba; Honduras (?). A tall palm, 6 meters high; petioles armed with stout hard prickles; leaf blades fan-shaped, 60 cm. long, pale green, composed of numerous

folded segments; spadices a meter long, with very numerous slender branches, the branches whitish-pubescent, the flowers scarcely 2 mm. long; fruits globose, 8–9 mm. in diameter. Schipp states that the plant grows only in swampy places. *Brahea psilocalyx* was based on *Peck* 241 from Manatee Lagoon.

Acoelorrhaphe pinetorum Bartlett (Carnegie Inst. Wash. Publ. 461: 33. 1935), recently described from Belize, *Bartlett* 11201, is another name for this palm. If the plant of British Honduras should prove distinct, as seems doubtful, Burret's name is the proper one for it. Bartlett indicates as vernacular names Hairy Tom Palmetto, Papta, and Prementa, the last doubtless a corruption of the Spanish *pimienta*.

ACROCOMIA Mart.

Acrocomia mexicana Karw. *Grugru Palm, Suppa Palm. Coyol* (Yucatan). *Tuk* (Yucatan, Maya). In the northern plains and perhaps elsewhere; Mexico and Central America. A large palm with tall thick trunk densely armed with long slender dark spines; leaves very large, pinnate, with narrow segments, densely clustered at the top of the trunk, the dead leaves persisting below the living ones; segments of the leaves and midrib densely spiny; flower and fruit panicles large and heavy, pendent, spiny; fruit large, black, globose, smooth. This palm grows usually in open places and often in dry regions. The fruits are eaten by cattle, and the flesh is eaten sometimes by people. From the trunk there is obtained a sweet sap which after fermentation forms an agreeably flavored palm wine.

ASTEROGYNE Wendl.

Asterogyne Martiana Wendl. *Pacuquilla* (Honduras). Southern part of the Colony, in primary forest; Central America. A small palm, the thick trunk 1 meter high or less; leaves few, long-stalked, simple, bilobed at the apex, the segments long-tapering, rusty-scurfy beneath; peduncles long, bearing at the apex 3–7 clustered spikes 8–20 cm. long; flowers white or green, sunken in pits in the rachis; fruits small, globose, 1-seeded. The leaves sometimes are used for thatching, although they are small for the purpose.

BACTRIS Jacq.

Small, erect, usually slender palms, viciously armed throughout with long slender needlelike spines; leaves clustered at the top of the stem or scattered along its upper part, pinnate, with numerous narrow, often spiny segments; spadix usually small and branched,

subtended by two hard spiny spathes; fruits small, globose, each with a single seed.

Fruit ellipsoid; leaves glabrous or nearly so.....*B. major.*

Fruit depressed-globose; leaves softly pubescent on the lower surface.....*B. trichophylla.*

Bactris major Jacq. *Pork-and-doughboy, Pokenoboy. Huiscoyol. Biscoyol* (Honduras). Abundant in swampy forest; ranging to South America. Stems rather slender, usually 1–3 meters high, forming dense clumps or large colonies, densely armed with very long, slender, dark spines; leaves short, parted into numerous linear segments, these armed along their edges with short spines, the rachis and petiole covered with very long, slender, blackish, woolly spines; spathes 2, hard, spiny; spadix branched; fruits small, globose, blackish, smooth, 1-seeded. This palm is one of the worst pests in the lowlands of Central America, often forming thickets that are impenetrable except by free use of a machete. The spines inflict painful wounds, and it is difficult to avoid them, because of the abundance of the plant.

Bactris trichophylla Burret, Repert. Sp. Nov. 32: 113. 1933. Type *Schipp* 8368, collected in forest, without mention of the locality, 100 meters. Plants about 7.5 meters high, forming colonies; leaves with about 25 segments; spathes 24 cm. long, covered with short, slender spines, not tomentose; fruit 1.5 cm. in diameter.

CHAMAEDOREA Willd.

Slender, usually low palms with cane-like smooth green unarmed stems; leaves scattered along the upper part of the stem, usually pinnatisect, sometimes simple; flowers of the two sexes on separate plants, the spadix small, simple or branched, inserted below or among the leaves, enclosed in several green husk-like spathes; branches of the spadix usually red or orange in fruit; fruits small, globose or oblong, black, containing a single seed.—The genus contains some of the smallest palms known, plants of certain Central American species flowering when only 30 cm. high. The plants are exceptionally attractive because of their graceful slender habit and small size, and for that reason they often are grown in northern hothouses. The unopened inflorescences with their enveloping spathes strongly suggest a small ear of corn with its husks. When opened, there is found inside a twisted mass of whitish branches and flowers. These tender inflorescences, called pacayas, are a

favorite vegetable in many parts of Central America, being fried with eggs. In some species the flowers are too bitter to be eaten.

Fruiting inflorescence simple.

Staminate inflorescence with numerous branches; plants 1.5–2.5 meters high.....*C. Arenbergiana.*

Staminate inflorescence with few (about 3) branches; plants small, about 1 meter high or less.....*C. adscendens.*

Fruiting inflorescence branched.

Leaves simple, bifid at the apex.....*C. geonomaeformis.*

Leaves divided into numerous narrow segments.

Fruit oblong or ellipsoid.....*C. graminifolia.*

Fruit globose.....*C. Schippii.*

Chamaedorea adscendens (Dammer) Burret. Jacinto Hills, *Schipp* S570; also in Guatemala and Campeche. Leaves with few or numerous narrow segments.

Chamaedorea Arenbergiana Wendl. *Pacaya* (Honduras). In wet forest; extending to Costa Rica. Leaves with numerous long, narrow segments; fruiting peduncle thick and stout, orange-red, rarely branched; fruits black, globose, 1.5 cm. in diameter.

Chamaedorea geonomaeformis Wendl. *Pacaya* (Honduras). In primary forest of the southern region; extending to Honduras. Stems very slender, 1.5 meters tall or less, smooth, green; leaves simple, 30–60 cm. long, slender-stalked, bifid at the apex, the lobes acute or acuminate; pistillate spike elongate, with a thick, fleshy rachis; staminate inflorescence usually much branched; fruits globose, scarcely 1 cm. in diameter, black.

Chamaedorea graminifolia Wendl. *Monkey-tail Palm. Pacaya* (Honduras). Frequent in forest in the southern region and perhaps also in the north; widely distributed in Central America. Stems 4.5 meters high or less, slender and reed-like; leaves large, divided into numerous long, narrow segments; inflorescences pendent, with numerous long, drooping branches; fruits oblong, 1 cm. long.

Chamaedorea Schippii Burret, Notizbl. Bot. Gart. Berlin 11: 1038. 1934. Jacinto Hills, *Schipp* S569. A handsome, slender palm, 2.5 meters high, with green stems; leaf segments numerous and narrow; rachis of the fruiting inflorescence red, the fruits black.

COCCOTHRINAX Sarg.

Coccothrinax argentea (Lodd.) Sarg. *Silver Thatch Palm. Nakaz* (Yucatan, Maya). Reported from the region without defi-

nite indication of its distribution, but probably in the northern plains; West Indies, Yucatan, southern Florida. Trunk as much as 20 cm. in diameter, usually not more than 6 meters tall and commonly much lower; leaves fan-shaped, 70 cm. broad or less, silvery-white beneath, long-stalked; flower panicles much branched, borne among the leaves, usually much shorter than the petioles, the flowers very small, whitish; fruit black, globose, 12 mm. or less in diameter.

COCOS L.

Cocos nucifera L. *Coconut. Coco, Cocotero.* Common along the coast, and on the islands; widely distributed in the tropics of both hemispheres. The coconut, most graceful and varied of all tropical trees, is of considerable economic importance in British Honduras. Commercial plantations have been established in some places, and large numbers of coconuts are exported.

COLLINIA Liebm.

Collinia elegans (Mart.) Liebm. Reported from British Honduras; also in Mexico. A very slender, unarmed palm, the few leaves clustered at the apex of the green stem; leaves with numerous linear segments; spadices much branched, borne on long, slender peduncles, the branches slender and flexuous; fruits small and globose.

DESMONCUS Mart.

Large, climbing palms, more or less densely armed with slender, blackish, needle-like spines; leaves large, pinnate, the segments usually more or less spine-armed near the base; upper part of the leaf rachis without leaflets but bearing pairs of stout, abruptly reflexed spines; fruits oblong or globose, in large panicles.—The name Basket Tie-tie is given to these plants in British Honduras. They are a great nuisance wherever they grow, for the leaves extend far out from the stem, and grasp and tear any passing object. The leaf spines are hard and strong and capable of inflicting severe flesh wounds.

Rachis of the leaf armed with short, slender spines.....*D. Schippii.*

Rachis of the leaf without short, slender spines, armed only at the apex.....*D. leiorhachis.*

Desmoncus leiorhachis Burret, Repert. Sp. Nov. 36: 203. 1934. Río Grande, *Schipp* 517a. The two species here listed are much alike in most of their characters, according to description, and perhaps are only forms of a single species.

Desmoncus Schippii Burret, Repert. Sp. Nov. 36: 202. 1934. Río Grande, *Schipp* 517. Described as a vine climbing to a height of 20–25 meters; fruits red. It is probable that a synonym of this is *Desmoncus quasillarius* Bartlett (Journ. Wash. Acad. Sci. 25: 85. 1935), the type of which was collected in Corozal District, *Gentle* 348. The vernacular names are reported as Basket Tie-tie and Basket Whist.

ELEUTHEROPETALUM (Wendl.) Oerst.

Eleutheropetalum Ernesti-Augusti (Wendl.) Oerst. Reported from the southern part of the colony by Burret, collected by Schipp; also in southern Mexico. A low, slender, unarmed palm with smooth green stems; leaves small, simple, bifid at the apex; fruiting spadix simple, the rachis thick and fleshy; staminate inflorescence much branched, the branches long and slender.

EUTERPE Gaertn.

Euterpe oleracea Mart.(?) *Monkey-tail Palm, Mountain Cabbage Palm.* In forests; ranging to South America. A tall, unarmed palm with slender, smooth, cylindrical trunk; leaves long-stalked, clustered at the top of the trunk, pinnatisect, the numerous narrow segments acuminate; inflorescences inserted below the leaves, with 2 spathes, the spadix once branched, the branches erect-spreading; fruits very small, globose, 1-seeded, the stigmas excentric or lateral. No information is available regarding the distribution of this palm in the Colony. The specific name is decidedly uncertain.

GEONOMA Willd.

Small or scarcely medium-sized, unarmed palms with usually smooth stems; leaves rather small, pinnatifid or sometimes simple; inflorescences simple or branched, the flowers sunken in pits in the rachis, small; fruit very small, globose, black, 1-seeded.

Spadix simple.....*G. glauca.*

Spadix branched.

Spadix pinnately twice branched; fruits 3 mm. long.
G. longepetiolata.

Spadix several times dichotomous; fruits 5–8 mm. long.

Plants tall, as much as 6 meters high; leaves with numerous narrow segments.....*G. binervia.*

Plants low, 2 meters high or less; leaves with few broad segments.....*G. oxycarpa.*

Geonoma binervia Oerst. *Pacuca* (Honduras). Occasional in primary forest in the southern part of the Colony; southward to Panama. Stems stout and pale, smooth; leaves large, pinnatisect, the upper segments confluent; spadices pubescent, with stout and rather short branches, pale reddish. An exceptionally handsome palm of neat appearance.

Geonoma glauca Oerst. *Capuche. Pacuquilla* (Honduras). Primary forest in the southern region; southward to Nicaragua. Trunk 1 meter high or less, often none; leaves stalked, stiff, divided into long linear segments, the upper segments broader and confluent; spadix long and slender, the rachis dull red; fruit purple, 1 cm. long or less. The species is referable to the genus *Calyptrogyne*, which is sometimes separated from *Geonoma*.

Geonoma longepetiolata Oerst. Occasional in primary forest in the southern part of the Colony; southward to Panama. Plants 6 meters high or less, with slender, smooth trunk; leaves rather small, with few narrow segments, these tapering into long and very slender, thread-like tips; panicles partly on the trunk below the leaves, pubescent, with long, slender branches.

Geonoma oxycarpa Mart. *Monkey-tail Palm.* Primary forest in the southern region; Mexico, Central America, West Indies. Stems with very short, smooth, pale joints; leaves long-stalked, small, with few broad segments, these with long, slender tips; panicles small, somewhat pubescent, the small fruits globose.

HEXOPETION Burret

Hexopetion mexicanum (Liebm.) Burret. *Lancetilla* (Honduras). *Astrocaryum Cohune* (Wats.) Standl. Wet hill forests of the southern part of the colony; Honduras to Mexico. A rather small palm, the slender trunk 1.5–4.5 meters high, densely armed with irregularly spaced spines, these often 5 cm. long or more, linear or broader, compressed and 2-edged, blackish; leaves large, with numerous narrow divisions, the petiole and rachis armed with spines; spathes 20–30 cm. long, white-woolly and spiny; staminate and pistillate flowers on the same branched spadix; fruits in a dense spike, obovoid, 5 cm. long, covered with short spines. The plant is a great pest in the forest, its slender spines penetrating the flesh easily and painfully.

MANICARIA Gaertn.

Manicaria saccifera Gaertn. *Confra, Yolillo* (Guatemala). In coastal swamps in the southern part of the colony; ranging to

Brazil. Plants coarse, sometimes 6 meters high or larger, but usually with a very short trunk, unarmed; leaves numerous, erect or ascending, often 5 meters long; inflorescence branched, about a meter long, with 2 spathes, the outer short, the inner a tough fibrous sac; flowers inserted in pits in the rachis; fruit of 1–3 globose, 1-seeded, partly united carpels, 4–5 cm. in diameter, covered with numerous thick, irregularly pyramidal tubercles. The leaves are much used in some parts of Central America for thatching, and are said to last for many years. The brown, feltlike spathes, composed of tough, interlacing fibers, form a persistent conic covering for the spadix. They are employed for fashioning long-peaked caps that are one of the articles commonly sold to tourists in Panama.

ORBIGNYA Mart.

Orbignya Cohune (Mart.) Dahlgren. *Attalea Cohune* Mart. *Cohune Palm. Manaca. Corozo. Tutz* (Maya). The commonest palm of the region, occurring extensively from sea level to an elevation of 540 meters, on all types of soil; Mexico, and probably as far south as Costa Rica. A tall, unarmed palm with very thick trunk, usually with persisting leaf bases; leaves plumelike and graceful, sometimes as much as 10 meters long, with numerous narrow segments; flower and fruit panicles very large and heavy, pendent, 1 meter long or more, often containing 500–800 fruits, these 6 cm. long, shaped like young coconuts of corresponding size. This palm is of considerable importance locally. The leaves are much used for thatching, and the pole-like rachis of the leaf for forming the framework of huts. Oil is obtained from the kernels, and the tender "cabbages" are eaten. During the World War large quantities of the nuts were exported to England for preparing charcoal used in gas masks. Attempts have been made to extract the oil, but these have failed heretofore, partly because of the difficulty of crushing the fruits, and also on account of the uncertainty of a continuous supply of them. (See Neil S. Stevenson, The Cohune Palm in British Honduras, *Trop. Woods* 30: 3–5. 1932.)

REINHARDTIA Liebm.

Small or medium-sized, unarmed palms; leaves small or large, long-stalked, parted or sometimes simple; spadix long-stalked, with few or numerous, erect or somewhat spreading branches; fruits globose or oblong.

Leaves with openings in the segments close to the rachis; fruits oblong..... *R. gracilior.*

Leaves without openings in the leaf segments; fruits globose. *R. latisecta.*

Reinhardtia gracilior Burret, Notizbl. Bot. Gart. Berlin 11: 555. 1932. In primary forest, southern part of the colony; type from Stann Creek Valley, *Schipp* S369. Plants about 1 meter high, very slender; leaves mostly 20–30 cm. long, with only a few broad segments, these irregularly toothed at the apex; fruits 1 cm. long, black. A very handsome plant, curious because of the "windows" in the leaves.

Reinhardtia latisecta (Wendl.) Burret. *Malortiea latisecta* Wendl. Primary forest in the southern region; Guatemala. Plants slender, as much as 7 meters high; leaves long-stalked, very large, cleft into few or numerous segments, these broadened toward the apex and irregularly toothed or cleft; spadix very long-stalked, much branched, the branches elongate, slender, sharply angled, stiff, suberect; fruit small and globose.

ROYSTONEA Cook

Tall palms with smooth, greenish or whitish trunks often 10–20 meters high, usually slightly swollen; leaves many at the top of the trunk, long and graceful, cut into numerous segments; panicles large, twice branched, pendent; fruit purplish, 1 cm. long.

Fruit ovoid, about as broad as long; sheaths with brown scales; leaves drooping.....*R. regia.*

Fruit obovoid-oblong, longer than broad; sheaths naked; leaves horizontal.....*R. oleracea.*

Roystonea oleracea (Mart.) Cook. *Oreodoxa oleracea* Mart. *Cabbage Palm. Yagua* (Honduras). Common in low, wet places, often in swampy forest; Central America, Barbados, and doubtless elsewhere. Trunk tall, pale, slightly swollen; inflorescences inserted below the leaves. This palm often rises high above the trees among which it grows.

Roystonea regia (HBK.) Cook. *Royal Palm. Palma Real.* Planted for ornament, but probably not native; Cuba, Florida, Hispaniola. Similar to the preceding, except as indicated in the key to the species. The favorite ornamental palm of Central America, and of many other parts of the American tropics.

SABAL Adans.

Sabal mauritiiformis (Karst.) Griseb. & Wendl. *S. excelsa* Morris, Colony of Brit. Hond. 68. 1883. *Bayleaf Palm. Botán.*

Common in the hill regions and perhaps elsewhere; also in Colombia. A tall palm, the very large, green, long-stalked leaves with fan-shaped blades 1.5 meters long or even larger; flower panicles very large and much branched, the branches slender, the minute flowers scarcely more than 2 mm. long. The name *Sabal excelsa* is not published formally by Morris, but merely mentioned casually in his discussion of the palms of British Honduras. He states that the name Bayleaf Palm is applied to the young plants of this species, whose adult form is termed Botán or Bootán Palm.

Sabal mayarum Bartlett (Carnegie Inst. Wash. Publ. 461: 35. 1935) is a name recently proposed for this palm, which is reported also for Yucatan and the Province of Pinar del Río, Cuba. It seems quite reasonable that the Yucatan plant should be distinct from the Colombian species to which Burret assigned it. The name Huano is said to be applied to it in Yucatan.

SCHIPPIA Burret

The genus consists of a single species, and was named in honor of William A. Schipp, whose botanical collections over several years have added a great amount of information to former knowledge of the flora of British Honduras.

Schippia concolor Burret, Notizbl. Bot. Gart. Berlin 11: 868. 1933. *Mountain Palmetto, Silver Palmetto.* A tall, unarmed palm, about 10 meters high, the trunk 10 cm. in diameter; leaves fan-shaped, with long petioles, less than 1 meter broad, pale beneath; inflorescences 60 cm. long or more, much branched, the flowers spirally arranged upon the branches; fruits globose, 2.5 cm. or more in diameter.

SYNECHANTHUS Wendl.

Synechanthus fibrosus Wendl. *Monkey-tail Palm.* Frequent in primary forest in the southern part of the Colony; Guatemala. A very slender, unarmed palm, 6 meters high or usually less, with slender, smooth, cane-like stems; leaves few, rather large, pinnatisect, the numerous narrow segments thin, long-tapering; inflorescences inserted among the leaves, with several spathes; spadix broom-like, with numerous, long, slender, flexuous branches bearing staminate and pistillate flowers; fruits small, longer than broad, orange, 1-seeded.

THRINAX Swartz

Thrinax Wendlandiana Beccari. *Chit* (Yucatan, Maya). Reported rather indefinitely from British Honduras, probably from

the northern plains; Yucatan, Cuba, Honduras (?). Plants rather low, said to be usually about 3 meters high, unarmed; petioles with copious wool-like fiber near the base; blades rounded, less than 1 meter broad, plaited, pale and silvery beneath; inflorescences much branched; fruits globose, 1 cm. in diameter. The soft fiber produced about the bases of the petioles is employed in some regions for stuffing pillows and cushions.

CYCLANTHACEAE. Cyclanthus Family

CARLUDOVICA Ruiz & Pavón

Carludovica utilis (Oerst.) Benth. & Hook. Middlesex, *Schipp* S8. A large, coarse, epiphytic vine with palm-like, 2-lobed leaves. In some parts of Central America the tough, flexible stems of the Carludovicas are utilized for making furniture. The specific name of the British Honduras plant is somewhat uncertain.

ARACEAE. Arum Family

ANTHURIUM Schott

Anthurium aemulum Schott.

Anthurium concinnatum Schott.

Anthurium crassinervium (Jacq.) Schott.

Anthurium myosuroides (HBK.) Endl. *Tie-tie.*

Anthurium scandens (Aubl.) Engler.

Anthurium scolopendrinum (Ham.) Kunth.

Anthurium tetragonum (Hook.) Schott. Northern River, *Gentle* 1291.

DIEFFENBACHIA Schott

Dieffenbachia seguina (L.) Schott. *Dumb Cane. Hoja de Puerco* (Honduras). Eldorado, *Schipp* S386.

MONSTERA Adans.

Monstera acuminata Koch. Near Cockscomb Mountains, *Schipp* S126. Specific determination somewhat uncertain.

MONTRICHARDIA Crüger

Montrichardia arborescens (L.) Schott. A tall, erect, aquatic plant, growing in shallow water. It is common in much of tropical America, but is unknown north of British Honduras.

PHILODENDRON Schott

Philodendron belizense Standl. Field Mus. Bot. 11: 129. 1932. Type from base of Cockscomb Mountains, *Schipp* 545.

Philodendron guttiferum Kunth. Middlesex, *Schipp.*

Philodendron oxycardium Schott.

Philodendron panamense Krause(?). Middlesex, *Schipp* S9. Material imperfect, and specific name uncertain.

Philodendron radiatum Schott. Honey Camp, *Lundell.*

Philodendron tripartitum (Jacq.) Schott. Stann Creek Valley, *Schipp.*

PISTIA L. Water Lettuce

Pistia Stratiotes L. An aquatic plant.

SPATHIPHYLLUM Schott

Spathiphyllum phryniifolium Schott. The young and tender inflorescences of plants of this genus are cooked and eaten as a vegetable in certain parts of Central America.

SYNGONIUM Schott

Syngonium podophyllum Schott. A large, coarse, epiphytic vine with cleft leaves.

XANTHOSOMA Schott

Xanthosoma violaceum Schott. *Coco, Malanga. Munul, Xcucutmacal* (Maya). Cultivated for its large, edible roots. The young leaves also are cooked and eaten. The plant is widely distributed in cultivation in America.

MAYACACEAE. Mayaca Family

MAYACA L.

Mayaca Aubleti Michx. A small moss-like aquatic plant with white flowers.

XYRIDACEAE. Yellow-eyed Grass Family

XYRIS L.

Xyris Jupicai L. Rich.

Xyris subnavicularis Malme, Arkiv. Bot. 13, pt. 8: 15. 1913. Type from Stann Creek, *Robertson.* All Pines, edge of swamp, *Schipp* S131.

ERIOCAULONACEAE. Pipewort Family

ERIOCAULON L. Pipewort

Eriocaulon Schiedeanum Koern.

Eriocaulon Schippii Standl. All Pines, *Schipp* 647.

PAEPALANTHUS Mart.

Paepalanthus Lamarckii Kunth. Collected by Peck.

Paepalanthus sp. One or possibly two additional species of the genus, perhaps new, have been found in the country recently.

SYNGONANTHUS Ruhl.

Syngonanthus gracilis (Koern.) Ruhl. Collected by Peck.

TONINA Aubl.

Tonina fluviatilis Aubl. All Pines, *Schipp.*

BROMELIACEAE. Pineapple Family

AECHMEA Ruiz & Pavón

Aechmea bracteata (Swartz) Mez.

Aechmea magdalenae André. *Silkgrass. Piñuela* (Petén). *Pita floja* (Central America). *Ananas magdalenae* Standl. In forest and thickets. A plant somewhat similar to the pineapple, the leaves with few remote, coarse teeth. The very acid fruits are edible. The leaves of this plant furnish one of the best fibers known, remarkable for its fineness, strength, and length. The plant has been cultivated in some regions for fiber, at least experimentally.

Aechmea nudicaulis Griseb.

Aechmea tillandsioides Baker. Big Creek, *Schipp* 98.

ANANAS Adans.

Ananas comosus (L.) Merrill. *Pineapple. Piña. A. sativus* Schult. Cultivated and doubtless more or less naturalized; native probably of Brazil.

BILLBERGIA Thunb.

Billbergia viridiflora Wendl. Jacinto Creek, Machaca, *Schipp* S563.

CATOPSIS Griseb.

Catopsis aloides (Cham. & Schlecht.) Baker.

Catopsis Berteroniana (Schult.) Mez. Sittee River, *Schipp* S132.
Catopsis nitida (Hook.) Griseb. Forest Home, *Schipp* 1042.

GUZMANIA Ruiz & Pavón

Guzmania lingulata (L.) Mez. Machaca, *Schipp* S591.

PITCAIRNIA L'Hér.

Pitcairnia imbricata Brongn.(?) Jacinto Hills, *Schipp* S588.
Pitcairnia Hemsleyana Mez. Middlesex, *Schipp* 456.

TILLANDSIA L.

Tillandsia Balbisiana Schult.
Tillandsia brachycaulos Schlecht. Tower Hill, *Karling* 10.
Tillandsia bulbosa Hook. f. Honey Camp; Stann Creek Valley.
Tillandsia digitata Mez. Middlesex, *Schipp* 390.
Tillandsia fasciculata Swartz.
Tillandsia festucoides Brongn.
Tillandsia filifolia Cham. & Schlecht. Maya Mounds, near Cockscomb Mountains, *Schipp* S104.
Tillandsia juncea LeConte. Hope Creek, *Schipp* 133.
Tillandsia polystachya L.
Tillandsia Schiedeana Steud.
Tillandsia streptophylla Scheidw. Tower Hill, *Karling* 23.
Tillandsia sublaxa Baker.
Tillandsia vestita Schlecht. & Cham.

VRIESIA Lindl.

Vriesia disticha (L.) Standl. Middlesex, *Schipp* S22.
Vriesia paniculata (L.) Mez. Mullins River Road, *Schipp* S189.
Vriesia Schippii L. B. Smith, Contr. Gray Herb. 99: 18. *pl. 5, figs. 5, 6.* 1932. Type from Middlesex, *Schipp* S82.

COMMELINACEAE. Dayflower Family

CALLISIA L.

Callisia repens L.

CAMPELIA L. Rich

Campelia Zanonia (L.) HBK. Stann Creek Valley, *Schipp.*

COMMELINA L. Dayflower

Commelina elegans HBK. *Hierba de Pollo* (Yucatan).

Commelina longicaulis Jacq.

DICHORISANDRA Mikan

Dichorisandra hexandra (Aubl.) Standl.

NEODONNELLIA Rose

Neodonnellia grandiflora (Donn. Smith) Rose. Big Creek, *Schipp* 934; Campeche and Guatemala. A slender vine with very fragrant, white flowers; grown in Campeche gardens over trellises for ornament.

RHOEO Hance

Rhoeo discolor (L'Hér.) Hance. *Señoritas embarcadas* (Honduras). *Chactsam* (Yucatan, Maya).

TRADESCANTIA L.

Tradescantia cumanensis Kunth.

Tradescantia geniculata Jacq.

ZEBRINA Schnizl.

Zebrina pendula Schnizl. *Cucarachita* (Yucatan). A trailing plant, its leaves striped with silver, dark purple-red beneath; cultivated in the United States under the name Wandering Jew.

PONTEDERIACEAE. Pickerelweed Family

EICHHORNIA Kunth. Water Hyacinth

Eichhornia crassipes (Mart.) Solms. Common.

PONTEDERIA L. Pickerelweed

Pontederia lanceolata Nutt.

Pontederia rotundifolia L.

LILIACEAE. Lily Family

ALLIUM L.

Allium Cepa L. *Onion. Cebolla. Cucut* (Maya). Cultivated commonly; native of the Old World.

Allium sativum L. *Garlic. Ajo. Cucut* (Maya). Cultivated; an Old World plant.

DRACAENA L.

Dracaena americana Donn. Smith. *Candlewood. Fiddlewood* (?). *Cerbatana.* Frequent in moist forest; south to Costa Rica. A tree 4–12 meters high with thick trunk and few, thick branches; branches densely leafy, the leaves linear, 20–30 cm. long, glabrous; flowers very small, creamy white, in large terminal panicles; fruit fleshy, yellowish green, 1.5–2.5 cm. in diameter, containing one or two large seeds. A handsome tree of striking appearance, suggestive of a yucca. It is of particular interest because it is the only American representative of a genus whose other species are native in the Old World.

YUCCA L.

Yucca elephantipes Regel. *Yucca. Izote* (Guatemala). *Tuc* (Yucatan, Maya). Planted for ornament. A tree of 3–10 meters, simple or branched, with narrow, swordlike leaves and large panicles of handsome white flowers. The young flowers often are cooked and eaten in Central America.

SMILACACEAE. Sarsaparilla Family

SMILAX L.

Large or small, woody vines, usually armed with stout prickles; leaves leathery, mostly entire, with 3–7 conspicuous longitudinal nerves; flowers small, greenish or brownish, in umbels in the leaf axils; stamens 6; fruit a globose, black or red berry containing 1–6 seeds.

Leaves hairy.....*S. mollis.*

Leaves glabrous.

Stems 4-sided.....*S. ornata.*

Stems terete.

Staminate flowers 1.5–2 mm. long.....*S. mexicana.*

Staminate flowers 3 mm. long.....*S. domingensis.*

Smilax domingensis Willd. *Tietie. Zarza, Corona de Cristo* (Honduras). Frequent; widely distributed in tropical America. A large glabrous vine, the stems only sparsely prickly or often unarmed; leaves oblong to ovate, very thick, obtuse or acute, cordate to acutish at the base; berries black or dark purple.

Smilax mexicana Griseb. *Zarza, Zarzaparrilla* (Yucatan). *Coceh* (Yucatan, Maya). Occasional in forest and thickets. A large, prickly vine, the leaves lanceolate to ovate; fruit black.

Smilax mollis Willd. *Pate* (Honduras). Honey Camp; Eldorado; widely distributed in tropical America. A large or small, unarmed vine, brownish-pubescent throughout; leaves oblong to narrowly ovate, cordate at the base; berries red. The large, yam-like roots are employed in Honduras for poisoning fish.

Smilax ornata Lem. *Zarza, Zarzaparrilla* (Honduras). Forests of the southern part of the colony. Guatemala to Honduras, and probably of wider distribution. A very large, woody vine, the thick 4-angled stems densely beset on the angles with large, hard, compressed prickles; flowers cream-colored; berries black. The large thick roots of this species are one of the sources of commercial sarsaparilla; they often are gathered in Central America for export.

HAEMODORACEAE. Bloodwort Family

XIPHIDIUM Aubl.

Xiphidium caeruleum Aubl.

AMARYLLIDACEAE. Amaryllis Family

Some of the species of *Agave* and *Furcraea* occur in British Honduras, at least in cultivation, but no material of them is available, and it is uncertain which species are represented. The local Maya names are reported as *Ki* and *Ikeh*. In Yucatan the Agaves are grown on a large scale for their fiber, from which twine is made.

CRINUM L.

Crinum cruentum Ker. Roaring Creek.

CURCULIGO Gaertn.

Curculigo scorzonerifolia (Lam.) Baker.

HIPPEASTRUM Herb.

Hippeastrum puniceum (Lam.) Urban. *Amaryllis. Adonis, Azucena roja* (Yucatan). A handsome ornamental plant with red flowers, cultivated in gardens, and perhaps naturalized in some localities. Native of tropical America.

HYMENOCALLIS Salisb. Spider Lily

Hymenocallis littoralis (Jacq.) Salisb. *Lirio* (Yucatan).

HYPOXIS L.

Hypoxis decumbens L.

POLIANTHES L.

Polianthes tuberosa L. *Tuberose. Nardo* (Central America). An ornamental plant of gardens, of Mexican origin.

DIOSCOREACEAE. Yam Family

DIOSCOREA L. Yam

Besides the native species listed below, some of the cultivated yams are grown in British Honduras for their edible roots, an important vegetable in most parts of tropical America.

Dioscorea convolvulacea Cham. & Schlecht.

Dioscorea esurientium Uline.

Dioscorea macrostachya Benth.

Dioscorea polygonoides Humb. & Bonpl.

Dioscorea spiculiflora Hemsl.

IRIDACEAE. Iris Family

CIPURA Aubl.

Cipura paludosa Aubl.

MARICA Ker

Marica gracilis Herb.

NEMASTYLIS Nutt.

Nemastylis Bequaertii Standl. Honey Camp; All Pines; Baker's Pine Ridge; Isabella Pine Ridge. Also in Yucatan.

MUSACEAE. Banana Family

HELICONIA L.

Heliconia acuminata Rich.

Heliconia aurantiaca Ghiesbr.

Heliconia Bihai L. Fairview, *Schipp* S414.

Heliconia Champneiana Griggs. Stann Creek Valley, *Schipp.*

Heliconia Mariae Hook. Fairview, *Schipp* S413.

Heliconia pendula Wawra. Middlesex, *Schipp.*

MUSA L.

Musa paradisiaca L. *Plantain. Plátano. Haas, Box haas* (Maya). Cultivated commonly.

Musa sapientum L. *Banana. Guineo. Haas* (Maya). Cultivated abundantly.

ZINGIBERACEAE. Ginger Family

ALPINIA L. Shell-flower

Alpinia speciosa (Wendl.) Schum. Native of the East Indies, sometimes grown for ornament.

COSTUS L.

Costus spicatus (Jacq.) Swartz. *Caña de Cristo. Pahtsab* (Yucatan, Maya).

Costus villosissimus Jacq. Middlesex, *Schipp* 416.

RENEALMIA L. f.

Renealmia aromatica (Aubl.) Griseb. *Nabay* (Petén, Maya).

CANNACEAE. Canna Family

CANNA L.

Canna edulis Ker. *Bijao, Platanillo* (Honduras). *Chankala* (Yucatan, Maya). Stann Creek Valley.

Canna indica L.

HEDYCHIUM Koenig

Hedychium coronarium Koenig. Cultivated for ornament and perhaps naturalized; native of India.

MARANTACEAE. Arrowroot Family

CALATHEA Meyer

Calathea albicans Brongn. Stann Creek district, *Stocker* 17; Middlesex, *Schipp* 253.

Calathea insignis Peters.

Calathea lutea (Aubl.) Meyer. *Bijao* (Honduras).

Calathea macrosepala Schum.

MARANTA L. Arrowroot

Maranta arundinacea L. *Sagú* (Yucatan). *Chaac* (Yucatan, Maya). Cultivated and also wild. Starch is made from the roots of cultivated plants.

MYROSMA L. f.

Myrosma guapilensis Donn. Smith. Middlesex, *Schipp.*

PLEIOSTACHYA Schum.

Pleiostachya pruinosa (Regel) Schum. *Bijagüillo* (Honduras). Eldorado, *Schipp* 1048.

STROMANTHE Sond.

Stromanthe Hjalmarssonii (Koern.) Peters. Without locality, *Kinloch.*

THALIA L.

Thalia geniculata L. Frequent in swamps.

BURMANNIACEAE. Burmannia Family

APTERIA Nutt.

Apteria aphylla (Nutt.) Barnhart.

BURMANNIA L.

Burmannia capitata (Walt.) Mart.

DICTYOSTEGIA Miers

Dictyostegia campanulata Karst.

GYMNOSIPHON Blume

Gymnosiphon tenellus (Benth.) Urban.

ORCHIDACEAE. Orchid Family

The list of orchids here presented is a short one, and there is no doubt that numerous other genera and many more species are to be found in British Honduras, especially in the wet forests of the southern part of the Colony.

BRASSAVOLA R. Br.

Brassavola nodosa (L.) Lindl. All Pines; Honey Camp; Tower Hill.

BLETIA Ruiz & Pavón

Bletia tuberosa (L.) Ames. Tower Hill, *Karling.*

CAMPYLOCENTRUM Benth.

Campylocentrum micranthum (Lindl.) Rolfe.

Campylocentrum Sullivanii Fawc. & Rendle.

CATASETUM L. Rich.

Catasetum integerrimum Hook.

CHYSIS Lindl.

Chysis bractescens Lindl. Reported for British Honduras by Schlechter.

CORYANTHES Hook.

Coryanthes picturata Reichenb. f. Bot. Zeit. 1864: 332, 415. 1864. Type from Belize, collected by Day.

CORYMBORCHIS Thouars

Corymborchis flava Kuntze. Stann Creek Valley, *Schipp* S302.

CYCHNOCHES Lindl.

Cychnoches chlorochilon Klotzsch. Without locality, *K. P. Schmidt* in 1923.

DIACRIUM Benth.

Diacrium bidentatum (Lindl.) Hemsl. Reported by Schlechter.

DICHAEA Lindl.

Dichaea Tuerckheimii Schlechter. Near Middlesex, *Schipp* S76.

ELLEANTHUS Presl

Elleanthus linifolius Presl. Middlesex, *Schipp* S75.

EPIDENDRUM L.

Epidendrum alatum Batem.

Epidendrum belizense Reichenb. f. Linnaea 41: 78. 1877. *Encyclia belizensis* Schlechter, Beih. Bot. Centralbl. 36, pt. 2: 471. 1918. Type from Belize, collected by Day and Saunders.

Epidendrum Boothianum Lindl.

Epidendrum bractescens Lindl.

Epidendrum cochleatum L. Honey Camp.

Epidendrum imatophyllum Lindl.

Epidendrum nocturnum Jacq.

Epidendrum paniculatum Ruiz & Pavón. Sittee River, *Schipp* S96.

Epidendrum polyanthum Lindl.

Epidendrum polybulbon Swartz. *Dinema polybulbon* Lindl. Reported by Schlechter.

Epidendrum rigidum Jacq.

Epidendrum Stamfordianum Batem.

Epidendrum stenopetalum Hook.

ERYTHRODES Blume

Erythrodes purpurea Ames.

EULOPHIA R. Br.

Eulophia alta (L.) Fawc. & Rendle. Honey Camp, *Lundell* 142.

GALEANDRA Lindl.

Galeandra Batemanii Rolfe. All Pines; Stann Creek Railway; collected by Schipp.

HABENARIA Willd.

Habenaria Lankesteri Ames.

Habenaria mesodactyla Griseb. All Pines, *Schipp* 605.

Habenaria odontopetala Reichenb. f. Honey Camp, *Lundell* 684.

Habenaria repens Nutt. All Pines, *Schipp* 655.

HORMIDIUM Lindl.

Hormidium tripterum (Brongn.) Cogn. Near Middlesex, *Schipp* S81.

IONOPSIS HBK.

Ionopsis utricularioides (Swartz) Lindl. Tower Hill, *Karling.*

ISOCHILUS R. Br.

Isochilus crassiflorus A. Rich. & Gal.

LAELIA Lindl.

Laelia Digbyana (Lindl.) Benth. Reported by Schlechter.

MASDEVALLIA Ruiz & Pavón

Masdevallia tubuliflora Ames. Near Cockscomb Mountains, *Schipp* S102.

MAXILLARIA Ruiz & Pavón

Maxillaria Friedrichsthaliana Reichenb. f.

Maxillaria tenuifolia Lindl.

Maxillaria uncata Lindl. *M. Macleei* Batem.

MORMOLYCE Fenzl

Mormolyce ringens (Lindl.) Schlechter.

NOTYLIA Lindl.

Notylia trisepala Lindl. & Paxt.

ONCIDIUM Swartz. Butterfly Orchid

Oncidium ascendens Lindl.

Oncidium carthagenense (Jacq.) Swartz. Honey Camp, *Lundell* 85.

Oncidium pusillum (L.) Reichenb. f. Middlesex, *Schipp* S79.

Oncidium sphacelatum Lindl.

ORNITHOCEPHALUS Hook.

Ornithocephalus Pottsiae Wats.

PLEUROTHALLIS R. Br.

Pleurothallis Blaisdellii Wats.

Pleurothallis marginata Lindl.

Pleurothallis yucatanensis Ames & Schweinf.

POLYSTACHYA Hook.

Polystachya luteola Hook. Honey Camp, Middlesex.

Polystachya minor Fawc. & Rendle. All Pines; Stann Creek Valley.

PONERA Lindl.

Ponera striata Lindl.

SCAPHYGLOTTIS Poepp. & Endl.

Scaphyglottis Behrii (Reichenb. f.) Benth. & Hook.

SCHOMBURGKIA Lindl.

Schomburgkia tibicinis Batem. All Pines, *Schipp* S97.

SOBRALIA Ruiz & Pavón

Sobralia fragrans Lindl. Stann Creek.

SPIRANTHES L. Rich.

Spiranthes graminea Lindl. All Pines, *Schipp* S98.

STELIS Swartz

Stelis ciliaris Lindl.

TRIGONIDIUM Lindl.

Trigonidium Egertonianum Batem.

VANILLA Swartz. Vanilla

Vanilla fragrans (Salisb.) Ames. *Vainilla. Zizbic* (Yucatan, Maya). Reported to be frequent in the forests.

CASUARINACEAE. Beefwood Family

CASUARINA L. Beefwood

Casuarina equisetifolia L. Planted as an ornamental tree; native of tropical Asia and Africa. Somewhat similar to a pine in general appearance, the branches whorled and spreading, the very slender branchlets bearing whorls of scales and suggestive of the stems of *Equisetum* or horsetail; fruit conelike, 1–2 cm. in diameter.

PIPERACEAE. Pepper Family

PEPEROMIA Ruiz & Pavón

The species of this genus are fleshy herbs, usually epiphytic in habit.

Peperomia chucanebana Trelease.

Peperomia crassiuscula Millsp.

Peperomia glutinosa Millsp.

Peperomia Gollii Trelease.

Peperomia granulosa Trelease(?).

Peperomia Lundellii Trelease. Honey Camp, *Lundell* 96a.

Peperomia pellucida (L.) HBK. The only terrestrial species known from British Honduras.

Peperomia pololensis Trelease. Little Cocquericot, *Lundell* 3830.

Peperomia praetenuis Trelease. Belize, in cultivation, *Lundell.*

Peperomia rotundifolia (L.) HBK. Stann Creek Valley, *Schipp.*

PIPER L.

Shrubs or small trees, rarely herbs; leaves alternate, entire; flowers minute, green, arranged in very dense, slender spikes, resembling catkins.

Spikes several together on a common peduncle.

Leaves peltate.....*P. peltatum.*

Leaves not peltate.....*P. umbellatum.*

Spikes solitary, opposite the leaves.

Leaves peltate.....*P. Tuerckheimii.*

Leaves not peltate.

Leaves deeply cordate at the base, very large and thin. *P. auritum.*

Leaves not cordate, or small and obscurely cordate.

Leaves 3–5-nerved, the nerves arising from the very base of the leaf blade.

Flowers pedicellate.....*P. yucatanense.*

Flowers sessile.

Leaves narrowly oblong.....*P. Schippianum.*

Leaves oblong-ovate to rounded-ovate.

Leaves 5-nerved, truncate or rounded at the base. *P. Lundellii.*

Leaves 3-nerved, obtuse or acute at the base. *P. psilorhache.*

Leaves penninerved, all or most of the nerves arising above the base of the blade.

Flower spikes conspicuously curved.....*P. elongatum.*

Flower spikes straight.

Leaves truncate or very broadly rounded at the base, not conspicuously unequal.....*P. middlesexense.*

Leaves conspicuously unequal at the base, one side shorter than the other, sometimes acute or acutish, never truncate or broadly rounded.

Leaves glabrous, smooth to the touch.

Leaves very unequal at the base, one side much shorter than the other....*P. Donnell-Smithii.*

Leaves only slightly unequal at the base, obtuse or acutish.

Lateral nerves of the leaves spreading at a wide angle.....*P. eldoradense.*

Lateral nerves strongly ascending.*P. atrichopus.*

Leaves conspicuously pubescent, at least beneath, often rough to the touch.

Leaves smooth and shining on upper surface. *P. nitidulifolium.*

Leaves rough on upper surface, dull..*P. Stevensonii.*

Piper atrichopus Trelease. Río Grande, in forest, *Schipp;* Honduras. A glabrous shrub or small tree; leaves oblong-lanceolate, long-acuminate, rounded or acutish at the base.

Piper auritum HBK. *Momo* (Yucatan). *Xmakulam* (Yucatan, Maya). Moist thickets; widely distributed in tropical America. Plants herbaceous or somewhat shrubby, rather succulent, 2 meters high or less; leaves often 20 cm. wide or larger. The crushed plant has a strong odor suggestive of sarsaparilla.

Piper Donnell-Smithii C. DC. Middlesex, *Schipp* 477; Guatemala. A shrub or tree as much as 6 meters high; leaves oblong, acuminate.

Piper eldoradense Trelease. Eldorado Road, dense forest, *Schipp* 1005. A small glabrous tree, the trunk as much as 7 cm. in diameter; leaves lance-oblong or elliptic-oblong, narrowly acuminate, acute at the base.

Piper elongatum Vahl. *Spanish Elder.* Middlesex, *Record* 15 (Yale 8783); widely distributed in tropical America. A shrub or small tree, growing in huamil; leaves lance-oblong, narrowly long-acuminate, rather softly pubescent beneath. This is one of the forms known as *P. aduncum* L., and perhaps should be so recognized.

Piper Lundellii Trelease. Type from Honey Camp, *Lundell* 570. A slender shrub; leaves short-petioled, broadly ovate, acute or short-acuminate, glabrous.

Piper middlesexense Trelease. Type from Middlesex, *Schipp* 286. A shrub 1.5 meters high, glabrous; leaves rather large, ovate, acuminate; flower spikes very long and slender.

Piper nitidulifolium Trelease. Tower Hill Estate, Honey Camp, Cayo District, Roaring Creek. A shrub; leaves short-petiolate, oblong to oblong-obovate, abruptly short-acuminate; spikes short and thick.

Piper peltatum L. Frequent in second-growth thickets or in wet forest; a species of wide distribution. A large, coarse herb, easily recognized by the very large, ovate-rounded, peltate leaves.

Piper psilorhache C. DC. Stann Creek Valley, Tower Hill Estate, Roaring Creek. A slender shrub; leaves ovate or oblong-ovate, rather small, glabrous, long-acuminate, bright green.

Piper Schippianum Trelease. Type from Stann Creek Valley, in forest, *Schipp* 316. Reported (probably in error) as a tree of 9 meters, with a trunk 12 cm. in diameter; leaves small, long-acuminate, glabrous; spikes much elongate, very slender.

Piper Stevensonii Trelease. Type from Toledo District, *N. S. Stevenson* 93 (Yale 14496); Big Creek. A shrub 3 meters high, the trunk 5–7 cm. in diameter; leaves oblong-ovate, long-acuminate, copiously pubescent. With this species I have placed several British Honduras collections that have been indicated by Trelease as new species, the plants, however, differing in no important respect from *P. Stevensonii*. The group of *Piper* to which this species belongs has been divided into a ridiculously large number of species, few of which, I feel sure, can be separated or recognized with any confidence.

Piper Tuerckheimii C. DC. Middlesex, in forest, *Schipp* 437; Guatemala and Honduras. A shrub a meter high; leaves ovate, very long-acuminate; branches densely pubescent.

Piper umbellatum L. Wet thickets and forest, at least in the southern part of the Colony; a species of wide distribution. A large coarse herb, easy to recognize because of the very large, broad, thin, rounded leaves, deeply cordate at the base.

Piper yucatanense C. DC. Northern part of the Colony; also in Yucatan. A slender shrub with short-petioled, ovate-oval leaves having long, narrow, tapering tips, distinct from all other local species in having pedicellate flowers.

LACISTEMACEAE. Lacistema Family

LACISTEMA Swartz

Lacistema aggregatum (Berg) Rusby. *Palo Mulato.* Occasional in forest; widely distributed in tropical America. A glabrous

tree 9 meters high, the trunk 10–20 cm. in diameter; leaves alternate, short-stalked, oblong or elliptic-oblong, acuminate, entire or nearly so; flowers minute, in very short and dense, bracted, clustered spikes in the leaf axils; fruit a small 3-valved capsule, red and somewhat fleshy at maturity. Wood brown, light, tough, and fibrous, suggesting Willow (*Salix*); not utilized.

SALICACEAE. Willow Family

SALIX L. Willow

Salix chilensis Molina. *Willow. Sauce* (usual Spanish name). Occasional along streams, perhaps not native; widely distributed in tropical America, the only species of the genus that extends south of Guatemala. A tree sometimes 18 meters high, with thick trunk and long drooping branches; leaves linear. The foliage is of a much lighter and brighter green than is usual in tropical trees. The wood is similar to that of the Black Willow (*Salix nigra* Marsh.) of the United States. (For description of the wood see *T. of T. A.*, pp. 106–107.)

MYRICACEAE. Bayberry Family

MYRICA L. Bayberry

Myrica cerifera L. *Tea Bark, Tea Box.* Honey Camp, Pine Peak, and elsewhere; Yucatan to Honduras; West Indies and eastern United States. A shrub or small tree; leaves alternate, narrowly oblong or oblanceolate, obtuse, tapering to the base, irregularly toothed or almost entire, without stipules, dotted beneath with yellow resin glands; flowers minute, the two sexes on separate plants, in small, dense spikes in the leaf axils; fruit a small globose nutlet, covered with whitish wax. The greenish wax obtained by boiling the fruits in water is employed in the United States for making candles that burn with an agreeable fragrance. The single collection from Pine Peak may be referable to *Myrica mexicana* Willd., but it is not clear to the writer how that species is to be separated from *M. cerifera*. What passes as the latter species in Mexico and Central America is a lowland shrub, growing usually in coastal thickets, while *M. mexicana* grows at greater elevations, often in high mountains.

FAGACEAE. Beech Family

QUERCUS L. Oak

Trees or shrubs; leaves alternate, deciduous or persistent; flowers monoecious, the staminate in slender catkins, the pistillate solitary

or clustered; fruit an acorn, subtended by an enlarged cup. The wood is hard, heavy, tough, and strong, with the structure typical of the Live Oak group; used only locally.

Cup of the acorn 3–8 cm. wide.

Twigs glabrous; cup of the acorn 5–8 cm. wide....*Q. insignis.*

Twigs hairy; cup 3–5 cm. wide.....*Q. corrugata.*

Cup of the acorn 1.5 cm. wide or less.

Leaves pale beneath, covered with a dense close tomentum.

Leaves usually entire, acute at the base and conspicuously stalked.....*Q. oleoides.*

Leaves conspicuously crenate, more or less cordate at the narrow, almost sessile base.....*Q. purulhana.*

Leaves green beneath, glabrous or almost so.

Leaves serrate with bristle-tipped teeth.....*Q. acutifolia.*

Leaves entire or undulate.

Twigs glabrous; leaves narrowly oblong.....*Q. parviglans.*

Twigs hairy; leaves oblong-elliptic or obovate....*Q. Schippii.*

Quercus acutifolia Née. Collected only by Schipp, along the Guatemalan boundary, 780 meters. Also in Mexico. A tree of 15 meters, the trunk 45 cm. in diameter; leaves slender-stalked, oblong-lanceolate, coarsely serrate, acuminate. The form occurring in British Honduras is var. *angustifolia* A. DC.

Quercus corrugata Hook. *Oak.* In the high mountains, *D. Stevenson*, without special locality; southward to Costa Rica. A tall tree; leaves oblong-lanceolate, thin, long-acuminate, coarsely and very sharply toothed, glabrous or nearly so; cup with large corky-thickened scales.

Quercus insignis Mart. & Gal. Camp 36, Guatemalan boundary, 850 meters, *Schipp* 1247; also in Mexico. A tree of 27 meters, the trunk 90 cm. in diameter; leaves large, obovate-oblong, entire or undulate, somewhat hairy beneath. This species is remarkable for its huge acorns, as much as 7 cm. broad.

Quercus oleoides Cham. & Schlecht. *Encino negro* (Guatemala). Seine Bight, Stann Creek Valley, and elsewhere; Mexico to Costa Rica. A tree 9–12 meters high, the trunk 30 cm. in diameter; leaves small, obtuse or rounded at the apex, glabrous and very lustrous on the upper surface; cup of the acorn 1.5 cm. broad. The form occurring in British Honduras is var. *australis* Trelease.

Quercus parviglans Trelease. All Pines, open pine flats, *Schipp* 663; Guatemala. A tree 9 meters high, with a trunk 22 cm. in diameter; leaves obtuse or acute, narrowly obtuse at the base or sometimes acute, often somewhat glaucous beneath; cup 1 cm. broad.

Quercus purulhana Trelease. Great Southern Pine Ridge, *Stocker;* Guatemala. Leaves large, rounded or very obtuse at the apex, coarsely crenate, green and glabrate above, densely tomentose beneath; cup of the acorn almost 2 cm. wide.

Quercus Schippii Standl. Carnegie Inst. Wash. Publ. 461: 53. 1935. Camp 36, Guatemalan boundary, 840 meters, *Schipp* 1248. Known only from the type collection. A tree 30 meters, the trunk 1 meter in diameter; adult leaves almost glabrous, large, short-stalked.

ULMACEAE. Elm Family

Trees or shrubs; leaves alternate, 3-nerved; sap watery; stipules small and inconspicuous; flowers small, greenish, often of two sexes, the calyx 4–5-lobed or of 4 or 5 sepals; petals none; fruit a small drupe.

Calyx deciduous; leaves entire or coarsely toothed.....*Celtis.*

Calyx persistent at the base of the fruit; leaves closely and finely toothed.....*Trema.*

CELTIS L.

Trees or shrubs, sometimes armed with spines; flowers borne in the axils of the leaves; drupe ovoid or globose, usually yellow at maturity.

Branches unarmed; leaves entire.....*C. Hottlei.*

Branches armed with hooked spines; leaves toothed....*C. iguanaea.*

Celtis Hottlei Standl. *Bullhoof* (*Female*). *Manteca* (Honduras). Hillbank, *C. S. Brown;* Petén, Guatemala, and Honduras; Panama; Colombia. A tree 18 meters high, the trunk 50 cm. in diameter; leaves short-petiolate, oblong or oblong-elliptic, acute or acuminate, shining, smooth; flowers in small axillary cymes scarcely longer than the petioles; drupes 1 cm. long or larger. The hard, heavy, and tough wood is not utilized, but is of scientific interest because of the normal occurrence of abundant calcium carbonate in the vessels of the heartwood and, to less extent, in the sapwood. (See *Trop. Woods* 12: 26 and 20: 21.)

Celtis iguanaea (Jacq.) Sarg. *Muc* (Yucatan, Maya). Frequent in thickets, especially in second growth. Widely distributed in

tropical America. A shrub or small tree, the branches often elongated and clambering; leaves small, oblong to elliptic, glabrate; flowers greenish yellow.

TREMA Lour.

Unarmed trees or shrubs; leaves oblique at the base, acute or acuminate; flowers minute, greenish or whitish, in small cymes in the leaf axils; drupes very small, red.

Leaves conspicuously cordate at the base, ovate or oblong-ovate; inflorescence dense and compact.....*T. floridana.*

Leaves merely oblique at the base, not cordate; inflorescence lax and open.....*T. micrantha.*

Trema floridana Britton. *Capulín, White capulín, Wild bay cedar, Bastard bay cedar.* Apparently frequent in the Corozal District; Guatemala, Yucatan, Florida. A shrub or small tree, usually in second growth; leaves short-petiolate, grayish, densely pubescent beneath; drupes 2 mm. long. The wood is pinkish, light, firm, medium-textured, and perishable; not utilized.

Trema micrantha (L.) Blume. Corozal region and probably elsewhere. Widely distributed in tropical America. A shrub or tree, sometimes 15 meters high, very similar to the last species, but with narrower, often much greener leaves. The bark contains a strong, tough fiber.

MORACEAE. Mulberry Family

Chiefly trees or shrubs, commonly with milky sap; leaves mostly alternate, with stipules; flowers minute, green, of two sexes; fruit exceedingly variable as to form, but always more or less juicy.—One of the larger families of Central American plants, some of the trees important as a source of lumber or other products.

Plants herbaceous.....*Dorstenia.*

Plants trees or shrubs.

Leaves deeply lobed.

Leaves pinnately lobed; cultivated trees.....*Artocarpus.*

Leaves palmately lobed; native trees.

Flowers in very dense, clustered spikes; leaves peltate, the petiole attached above the base of the blade...*Cecropia.*

Flowers in loose cymes; petiole attached at the base of the leaf blade.....*Pourouma.*

Leaves entire or merely toothed.

Flowers borne on the inner surface of a globose hollow receptacle, this with a small opening at the apex.....*Ficus.*

Flowers never on the inside of a receptacle.

Flowers of one or both sexes in catkin-like spikes or racemes.

Pistillate flowers in globose heads; trees often armed with spines.....*Chlorophora.*

Pistillate and staminate flowers both in spikes or racemes; trees unarmed.....*Trophis.*

Flowers never in spikes or racemes, arranged in heads or upon flattened receptacles, sometimes solitary.

Plants with stout prickles on the branchlets and stipules. *Poulsenia.*

Plants unarmed.

Staminate peduncles bearing several heads; leaves white-tomentose beneath.....*Coussapoa.*

Staminate peduncles bearing a single head or receptacle; leaves not white-tomentose beneath.

Pistillate receptacles many-flowered; leaves densely hairy, cordate at the base.....*Castilla.*

Pistillate receptacles 1–2-flowered; leaves glabrous or nearly so, not cordate.

Receptacles sessile, the bracts broad and conspicuous. *Pseudolmedia.*

Receptacles stalked, the bracts minute and inconspicuous.

Pistillate flowers 2 or more on the turbinate receptacle; staminate flowers with a perianth. *Piratinera.*

Pistillate flower 1 on the globose receptacle; staminate flowers without a perianth. *Brosimum.*

ARTOCARPUS Forst.

Artocarpus communis Forst. *Breadfruit. Mazapán, Arbol de Pan.* Planted for its edible fruit and as a shade tree. Native of the East Indies and the Pacific islands, but introduced long ago to tropical America.

BROSIMUM Swartz

Large or medium-sized trees; leaves short-petiolate, ovate to oblong, more or less coriaceous, glabrous, entire except sometimes

on young shoots; receptacles globose, many-flowered; fruit rather large, globose, with abundant flesh. The woods of the British Honduras species are pale brown or nearly white, hard, tough, and strong, of about the consistency of Hickory (*Carya*), not difficult to work, finishing smoothly, not resistant to decay or insects.

Leaves acute or obtuse, the nerves usually conspicuously oblique to the costa..... *B. Alicastrum.*

Leaves long-acuminate, the lower nerves perpendicular to the costa. *B. terrabanum.*

Brosimum Alicastrum Swartz. *Breadnut. Ramón, Masico, Capomo. Ox* (Maya). A large or medium-sized tree, occurring in the northern portion of the Colony. In Yucatan and British Honduras the branches are cut and fed to horses and other stock, being often the most important forage during the dry season. The pulp of the fruit is edible, and the seeds when boiled are palatable and nutritious, being consumed in substantial amounts in some regions.

Brosimum terrabanum Pittier. *Masicarán.* In the forests of the southern part of the Colony; one of the most abundant trees of the Atlantic lowlands of Central America, ranging southward at least to Costa Rica and probably to Panama. It is rather doubtful whether this species is distinct from *B. Alicastrum,* although the two forms usually can be distinguished by the foliage, and *B. Alicastrum* does not range south of the Yucatan Peninsula. It occurs also in the Antilles.

CASTILLA Cervantes

The generic name often is written *Castilloa,* without justification.

Castilla elastica Cervantes. *Rubber tree. Ule. Yaxha, Kiikche* (Yucatan, Maya). A medium-sized tree of lowland forest; Mexico to Honduras, and perhaps farther southward. Noteworthy for its large flannel-like leaves, drooping on each side of the branches, and for its large, bright-red, showy fruits. Castilla trees are the source of Central American rubber, and most of the larger individuals seen either in the forest or in cultivation bear large, oblique gashes on their trunks that show they have been tapped. Attempts at cultivation of the tree on a large scale have not proved profitable. The wood is pale brown, light, fairly soft, not strong, perishable; not utilized. (For description see *T. of T. A.,* pp. 128–130.)

CECROPIA L.

Small or medium-sized trees with hollow, whitish, smooth trunks; stipules large, deciduous; leaves long-stalked, very large, peltate,

deeply lobed, usually whitish beneath and tomentose; flowers dioecious, in dense spikes, these clustered at the ends of short or long peduncles.—The hollow branches invariably are infested by small ants that inflict severe bites when the tree is molested. The name Trumpet sometimes given to the trees alludes to a tradition that the stems were employed for making trumpets by the aborigines of tropical America. After palms, the Cecropias probably constitute the most conspicuous and characteristic element of the vegetation of the Central American lowlands, for their appearance is quite unlike that of any northern tree. The light, soft, coarse-textured, perishable wood is not utilized. (For description see *T. of T. A.*, pp. 144–147.)

Fruiting spikes 4–8 cm. long.....*C. asperrima.*

Fruiting spikes 20–40 cm. long.....*C. mexicana.*

Cecropia asperrima Pittier. *Trumpet. Igarata. Ix-coch* (Maya). Collected only at Alfonsoville, but probably of frequent occurrence. Extending to Costa Rica.

Cecropia mexicana Hemsl. *Trumpet. Guarumo.* A frequent small tree of the lowlands, springing up abundantly in abandoned land; southern Mexico to Panama.

CHLOROPHORA Gaud.

Chlorophora tinctoria (L.) Gaud. *Fustic. Mora.* A small or medium-sized tree of well-drained soil; widely distributed in tropical America. Leaves of young branches frequently lobed, like those of mulberry. The majority of the trees, perhaps, have their branches armed with long stout spines, but many individuals are altogether spineless. Wood bright yellow, becoming brownish upon exposure; very hard, heavy, tough, and strong, takes a high polish and is resistant to decay and insects; used locally for fence posts and fuel, but is best known as a dyewood. (For detailed description see *T. of T. A.*, pp. 118–122.)

COUSSAPOA Aubl.

Coussapoa oligocephala Donn. Smith. Honey Camp; Forest Home; Guatemala. A small or medium-sized tree, at first a strangling epiphyte, but standing alone after the death of the host; leaves stalked, oblong, entire, green above, white beneath; latex yellow; flower heads globose, the staminate 4 mm. broad, the pistillate three times as large.

DORSTENIA L.

Dorstenia Contrajerva L. *Contrahierba.* The plant is much used in domestic medicine. In Central America the thick rootstocks often are employed for flavoring cigarette tobacco.

Dorstenia Contrajerva L. var. **Houstoni** (L.) Bureau. In this variety the leaves are entire or merely angled. In the typical form of the species they are deeply lobed.

Dorstenia Lindeniana Bureau. Pueblo Viejo, *Schipp* 1276.

FICUS L. Fig

Large or medium-sized trees; leaves alternate; flowers minute, borne upon the inside of a small or large, hollow receptacle, this usually globose, with a small opening at the apex covered by a few overlapping bracts, the whole receptacle in age becoming fleshy.—The fruits (receptacles) of the wild figs are similar to those of the cultivated fig (*Ficus Carica*), but usually much smaller, and scarcely edible, or at best of unattractive flavor. The trees usually begin growth as epiphytes, germinating on the branches of trees, the young plants sending down cord-like roots that ultimately envelop and strangle the host. Wild figs, although abundant in most parts of Central America, have at present little economic importance. They are esteemed as shade trees because of their dense, broad crowns. Their bark was employed by the aborigines long ago for making paper and clothing. The sap of some species, at least, contains a kind of rubber of probably inferior quality. The woods are light-colored, soft, laminated, and perishable; not utilized. (For description see *T. of T. A.*, pp. 142–143.)

Receptacles (fruits) solitary, the involucre at their base 3-lobed.

Leaves rounded at the apex and abruptly short-pointed, often rough beneath.....*F. radula.*

Leaves gradually narrowed to the acute or acuminate tip, smooth.

Leaves about four times as long as broad.....*F. segoviae.*

Leaves not more than two and one-half times as long as broad. *F. glabrata.*

Receptacles in pairs, the involucre 2-lobed.

Receptacles sessile.

Leaves hairy beneath along the midrib.....*F. Colubrinae.*

Leaves glabrous beneath.

Involucre evidently asymmetric, almost as long as the fruit.

Leaves mostly 4–8 cm. long.....*F. Lundellii.*

Leaves chiefly 9–17 cm. long.....*F. Tuerckheimii.*

Involucre symmetric, small and inconspicuous.

Receptacles large, mostly 12–15 mm. in diameter; leaves usually 3 times as long as broad or longer.
F. panamensis.

Receptacles mostly less than 10 mm. in diameter; leaves about twice as long as broad.

Leaf blades obtuse or rounded at the base, not at all cordate.....*F. Schippii.*

Leaf blades shallowly cordate at the base.

Stipules persistent; leaves mostly obovate or obovate-oblong.....*F. costaricana.*

Stipules early deciduous; leaves not obovate.
F. Kellermanii.

Receptacles stalked.

Leaves conspicuously pubescent beneath.

Receptacles 8–9 mm. in diameter; leaves 3–5 times as long as broad.....*F. Donnell-Smithii.*

Receptacles larger; leaves less than two and one-half times as long as broad.

Leaves glabrous on the upper surface or nearly so; fruits as broad as long.....*F. lapathifolia.*

Leaves hairy and rough on the upper surface; fruits longer than broad.....*F. Popenoei.*

Leaves glabrous beneath.

Fruits large, 15–25 mm. in diameter.

Leaves cuneate-obovate, rounded at the apex...*F. involuta.*

Leaves oblong or oval, broadest at or below the middle.
F. Goldmanii.

Fruits small, 4–12 mm. in diameter.

Receptacles only 4–6 mm. in diameter. Leaves small, obovate-oblong, tapering to the base...*F. Oerstediana.*

Receptacles larger.

Leaves usually rounded or obtuse at the apex, mostly emarginate at the base.....*F. ovalis.*

Leaves acuminate.

Ostiole (the small opening at the apex of the fruit) depressed; leaves mostly acute at the base. *F. padifolia.*

Ostiole elevated; leaves rounded or very obtuse at the base.

Fruits globose, together with their stalks less than half as long as the petioles.....*F. Hemsleyana.*

Fruits globose-obovoid, with their stalks often almost equaling the petioles.....*F. laevigata.*

Ficus Colubrinae Standl. Maya Mounds, Forest Home, *Schipp;* southward to Costa Rica. A tree 9 meters high, with trunk diameter of 10–13 cm.; leaves small, 3-nerved, with few lateral nerves, abruptly short-pointed, the petioles hairy; fruits very small.

Ficus costaricana (Liebm.) Miq. *Amate* (Guatemala). Sittee River, *Schipp* 533; extending to Panama. A tree 18 meters high, with trunk diameter of 60 cm.; leaves oblong to obovate, glabrous or nearly so; stipules large and often long-persistent.

Ficus Donnell-Smithii Standl. Toledo, *Schipp* 1050; Guatemala. A tree of 15 meters, the trunk 25 cm. in diameter; leaves petioled, oblong or narrowly oblong, 7–15 cm. long, acuminate to rounded at the apex, glabrate above, short-pilose or almost glabrous beneath.

Ficus glabrata HBK. *Wild Fig. Amate.* A tree 9–18 meters high or even larger, with trunk diameter of 15–45 cm. or more, the bark smooth and pale; leaves large, pale green, with numerous lateral nerves; fruits mostly 1.5–4 cm. in diameter. The trees of this species probably attain a larger size than those of any other Central American fig. The large fruits are sweet and fairly good to eat. Like those of most species, they are much sought by birds and other animals.

Ficus Goldmanii Standl. *Matapalo.* Honey Camp; northern Mexico to Salvador. A medium-sized tree; leaves large and thick, obtuse or rounded at the apex, shallowly cordate at the base.

Ficus Hemsleyana Standl. Big Creek, *Schipp* 115; southward to Panama. A tree 7.5 meters high, the trunk 10 cm. or more in diameter; leaves long-stalked, oblong, abruptly narrow-acuminate; fruits 8–10 mm. in diameter.

Ficus involuta (Liebm.) Miq. *Matapalo.* Apparently frequent; Mexico to Panama. A handsome tree, as much as 15 meters high with trunk diameter of 30 cm., the crown broad and spreading; leaves

short-stalked, long and narrow, long-tapering to the base, glabrous; fruits on very short, thick stalks.

Ficus Kellermanii Standl. Big Fall, Belize River, *Lundell* 3954, and probably of frequent occurrence; Mexico to Honduras. A large or medium-sized tree; stipules 1–2 cm. long; leaves mostly oval-oblong to oval, 5–15 cm. long, rounded to acute at the apex.

Ficus laevigata Vahl. Forest Home, *Schipp;* Yucatan, West Indies. A tree 9 meters high, with trunk diameter of 10–13 cm.; leaves oblong-elliptic, short-acuminate, rounded at the base; fruits green or yellow.

Ficus lapathifolia (Liebm.) Miq. Forest Home, *Schipp* 993; southern Mexico and Guatemala. A tree 12 meters high with trunk diameter of 15 cm.; leaves thick, medium-sized, acute or obtuse, obtuse or rounded at the base; fruits short-stalked, densely soft-hairy.

Ficus Lundellii Standl. Of infrequent occurrence, apparently; also in Petén. Leaves small, mostly elliptic or oblong-elliptic, acute to rounded at the apex, the stipules small and narrow.

Ficus Oerstediana Miq. *Matapalo.* Frequent; southward to northern South America. A tree 9–15 meters high, the trunk 20–60 cm. in diameter; leaves short-stalked, small, leathery, short-pointed; fruits smaller than in any other Central American species.

Ficus ovalis (Liebm.) Miq. *Matapalo.* Frequent in forest or thickets; southward to Costa Rica. A small tree; leaves long-stalked, oblong to oval, glabrous; fruits small, short-stalked.

Ficus padifolia HBK. *Higuillo* (Honduras). Occasional in forest; Mexico to Panama. A tree of medium or rather large size, the crown spreading; leaves small, lance-oblong, often long-acuminate, frequently acute at the base; fruits long-stalked.

Ficus panamensis Standl. *Higuero* (Honduras). Frequent in forest; southern Mexico to Colombia. A tree 9 meters high with trunk diameter of 12–20 cm., or larger; leaves large and thin, slender-stalked, gradually narrowed to the narrow rounded base, abruptly pointed.

Ficus Popenoei Standl. Forest Home, *Schipp* 1008; Honduras; Petén (?). A tree 9 meters high with trunk diameter of 12–15 cm.; leaves large, more or less obovate, usually rounded at the apex, broadly rounded or narrowly cordate at the base, very rough on the upper surface; fruits large, yellow, densely hairy.

Ficus radula Willd. *Higo, Higuero* (Honduras). Frequent in forest; Mexico to South America. A large or medium-sized tree;

leaves elliptic to elliptic-oblong; stipules large but soon deciduous; fruits 1.5–3 cm. in diameter.

Ficus Schippii Standl. Field Mus. Bot. 8: 7. 1930. Type from Middlesex, *Schipp* 334. An epiphytic tree 15 meters high, the trunk 10–13 cm. in diameter; leaves thick, elliptic-oblong, medium-sized, rather long-acuminate; fruits very small.

Ficus segoviae Miq. El Cayo, *Bartlett* 12078; Mexico to Nicaragua. A large or small tree; leaves narrowly lance-oblong, long-acuminate, bright green, smooth; fruits large, pale green.

Ficus Tuerckheimii Standl. Forest Home, *Schipp* 1035; southward to Costa Rica. An epiphytic tree 9 meters high, the trunk 13 cm. in diameter; leaves medium-sized, oval, thick, rounded at the apex and bluntly short-pointed.

PIRATINERA Aubl.

Piratinera panamensis Pittier. Collected at Nazareth and along the Guatemalan boundary, at 60–850 meters; also in Panama. An almost glabrous tree 10 meters high, with smooth grayish bark; leaves oblong or elliptic-oblong, short-stalked, 5–10 cm. long, abruptly short-acuminate, obtuse and somewhat oblique at the base, pale beneath; receptacles axillary, solitary, stalked, 1–1.5 cm. broad, covered with rounded peltate bracts; fruit with 1 or 2 seeds. The wood is white, fine-grained, and hard.

POULSENIA Eggers

Poulsenia armata (Miq.) Standl. Río Grande, in forest, *Schipp* 1154; Costa Rica to Ecuador. A tree of 15 meters, the trunk 25 cm. in diameter; leaves short-stalked, rounded-ovate to oblong, large, abruptly short-pointed, somewhat oblique at the base; flowers in dense globose heads. In Panama the Indians make a kind of coarse cloth from the inner bark, soaking it in water and beating it out into thin sheets. A similar sort of cloth is sometimes made in various parts of Central America from other trees of this family.

POUROUMA Aubl.

Pourouma aspera Trécul. *Trumpet. Guarumo de Montaña* (Honduras). Maya Mounds at the base of the Cockscombs, common, *Schipp* S127; ranging to northern South America; frequent on low hills along the Atlantic coast of Central America. Often a tall tree, the foliage similar to that of *Cecropia* but the leaves grayish rather than white beneath; fruits 1.5 cm. long, black at maturity,

arranged in lax cymes. The wood is pale brown, light, soft, coarse-textured, and perishable; not utilized.

PSEUDOLMEDIA Trécul

Small or large trees; leaves coriaceous, oblong or lanceolate, entire, glabrous or nearly so; flowers dioecious, the staminate in sessile axillary heads, the pistillate solitary; fruit small, ovoid, subtended by the broad persistent bracts.

Lateral nerves of the leaves 10–12 on each side; bracts of the staminate flowers glabrate.....*P. spuria.*

Lateral nerves 15–20 on each side; bracts densely silky.
P. oxyphyllaria.

Pseudolmedia oxyphyllaria Donn. Smith. *Cherry.* Watrous Road, Columbia; southern Mexico and Guatemala. A medium-sized tree.

Pseudolmedia spuria (Swartz) Griseb. *Cherry. Manax* (Maya). On high ridges; also in adjacent Guatemala and in the Greater Antilles. A large or medium-sized tree with thin bark. It is reported that the latex flows easily, but is hard to collect. The red fruits, called "cherries," are said to have a delicious flavor, and are much eaten. The wood is light brown, hard, heavy, tough, coarse-textured, splintery, not durable; the parenchyma is in very numerous, broken, tangential lines, forming an irregular network with the rays; timber not utilized.

TROPHIS L.

Small or large trees, the leaves entire or toothed; flowers green, dioecious, the staminate in long slender aments, the pistillate in spikes or racemes; fruit a small drupe with scant flesh and a large seed.

Leaves rough to the touch; fruiting spikes dense.....*T. racemosa.*

Leaves smooth to the touch; fruiting spikes much interrupted and with relatively few flowers.....*T. chorizantha.*

Trophis chorizantha Standl. Pueblo Viejo, 510 meters, *Schipp* 1261; also in Honduras. A tree of 6 meters, the trunk 7 cm. in diameter; leaves short-petioled, oblong or obovate-oblong, narrowly acuminate, entire, glabrous; fruit 5–6 mm. long.

Trophis racemosa (L.) Urban. *T. americana* L. *White Ramón. Chacox* (Yucatan, Maya). Widely distributed in tropical America. A small or medium-sized tree; leaves entire or practically so, often

very rough; fruits 1 cm. long or less, red, in short spikes. It is reported that the leaves are fed to stock, like those of *Brosimum*. The fruits are edible, but their flesh is scant. The wood is dark brown, hard, heavy, coarse-textured, splintery; the parenchyma is in somewhat irregular tangential bands producing a laminated structure suggesting *Ficus;* timber not utilized.

URTICACEAE. Nettle Family

Herbs, shrubs, or small trees, often armed with stinging hairs; leaves alternate or opposite, entire or toothed, often sprinkled with pale, linear or dot-like cystoliths; flowers small, greenish, usually of separate sexes, without petals; perianth of 2–5 lobes or sepals, or sometimes absent; stamens 2–5; fruit small, 1-seeded, dry or fleshy.—The woods are of anomalous structure, containing very numerous strands of included phloem which quickly decay and leave a fibrous structure suggesting the inner part of a palm stem.

Shrubs or small trees.

Flowers sessile and densely clustered in the leaf axils; plants unarmed..... *Phenax.*

Flowers in cymes, panicles, or spikes.

Perianth present; flowers in cymes or panicles; plants usually with stinging hairs..... *Urera.*

Perianth none; flowers in long, very slender, drooping spikes, or in panicles; plants without stinging hairs... *Myriocarpa.*

Herbs.

Leaves opposite. Plants without stinging hairs..... *Pilea.*

Leaves alternate.

Plants with stinging hairs; leaves coarsely toothed..... *Fleurya.*

Plants without stinging hairs; leaves entire..... *Rousselia.*

FLEURYA Gaud.

Fleurya aestuans (L.) Gaud.

MYRIOCARPA Benth.

Shrubs or small trees with small or large leaves; flowers minute, white; fruit dry.

Leaves small, usually 7 cm. wide or less.

Pistillate inflorescence panicled, with short branches; achenes long-ciliate..... *M. obovata.*

Pistillate inflorescence of long pendent racemes; achenes eciliate (?) or sparsely short-ciliate.....*M. heterostachya.*
Leaves large, mostly 10 cm. wide or broader; inflorescence simple. *M. yzabalensis.*

Myriocarpa heterostachya Donn. Smith. Sand Hill, in forest, *Schipp;* Guatemala. A tree 9 meters high, the trunk 18 cm. in diameter; leaves slender-stalked, lanceolate to lance-elliptic, almost entire, glabrate, acuminate.

Myriocarpa obovata Donn. Smith. Caves, Stann Creek Railway, in forest, *Schipp* 869; ranging to Nicaragua. A tree 12 meters high, the trunk 20 cm. in diameter; leaves obovate or oblong-obovate, glabrous, inconspicuously toothed.

Myriocarpa yzabalensis (Donn. Smith) Killip. *Chichicastillo* (Honduras). Frequent in forest; extending to Panama. A shrub or small tree 3–6 meters high, with few branches; leaves broadly ovate to oblong-elliptic, finely and closely blunt-toothed, harshly pubescent; spikes thread-like, drooping, often 30–60 cm. long.

PHENAX Wedd.

Phenax hirtus (Swartz) Wedd. Río Viejo, in forest, *Schipp* S607; widely distributed in tropical America. A slender shrub or small tree, according to Schipp a tree of 7 meters with trunk diameter of 10 cm.; leaves slender-petioled, 3-nerved, ovate to lanceolate, narrow-acuminate, coarsely crenate; flowers brownish; fruit dry.

PILEA Lindl.

Pilea chiapensis Killip. Camp 32, Guatemalan boundary, 630 meters, *Schipp* S702. A rare plant, occurring also in southern Mexico.

Pilea microphylla (L.) Liebm. *Yomha* (Yucatan, Maya).

Pilea pubescens Liebm. Roaring Creek, *Lundell* 330.

ROUSSELIA Gaud.

Rousselia humilis (Swartz) Urban. Honey Camp, *Lundell* 552. The genus is unknown elsewhere in Central America.

URERA Gaud.

Shrubs or small trees; leaves alternate, long-petiolate, toothed; flowers usually dioecious, small, greenish; achene in fruit surrounded by the fleshy, enlarged calyx, the whole resembling a juicy fruit.

Leaves coarsely toothed; achene more than 2 mm. long; fruit white. *U. baccifera.*

Leaves finely toothed; achene less than 2 mm. long; fruit orange-red. *U. elata.*

Urera baccifera (L.) Gaud. *Cow-itch. Ortiga* (Yucatan). *Chichicaste* (Central America generally). *Laal* (Yucatan, Maya). Common in thickets; widely distributed in tropical America. A shrub or a small tree with brittle branches, the branches densely armed with stout prickle-like hairs; leaves oval to broadly ovate. Often planted in Central America for hedges. If the plant is touched even gently, the hairs sting the flesh, causing extreme pain and often irritation of the flesh that may last for many hours.

Urera elata (Swartz) Griseb. *Chichicaste* (Honduras). Occasional in thickets or forest; Central America, Jamaica. Sometimes a tree of 7.5 meters but usually smaller, armed with stinging hairs; leaves ovate or ovate-oblong, rounded at the base. The plant stings much less painfully than the preceding species.

PROTEACEAE. Protea Family

ROUPALA Aubl.

Roupala borealis Hemsl. Río Privación, El Cayo District, *Bartlett* 11794; Mexico, Guatemala. A large shrub or small tree; leaves alternate, long-stalked, those on sterile branches pinnate, those of fertile branches simple, ovate or elliptic, long-acuminate, coarsely toothed, glabrous or nearly so; flowers small, in long slender spikes; perianth 4-parted; stamens 4; fruit a woody follicle. Wood brown or reddish, hard, heavy, with prominent Oak-like rays that give rise to attractive ribbon grain on quarter-sawed lumber; uses very limited because of the small size of the trees. (For description of similar wood see *T. of T. A.*, pp. 147–149.)

LORANTHACEAE. Mistletoe Family

Parasitic shrubs; leaves opposite, thick, fleshy, entire; flowers small or large, with a simple perianth, usually no corolla present, but the calyx often colored and corolla-like; fruit a small, often transparent berry with very sticky pulp.

Flowers large and showy, 2.5 cm. long or larger. . . . . *Psittacanthus.*

Flowers small and inconspicuous, less than 1 cm. long.

Flowers immersed in the axis of the spike.

Perianth simple, no corolla present; leaves not cordate at the base.....*Phoradendron.*

Perianth double, both corolla and calyx present; leaves cordate at the base.....*Oryctanthus.*

Flowers not immersed in the spike.

Flowers sessile.....*Phthirusa.*

Flowers pediceled.....*Struthanthus.*

ORYCTANTHUS Eichler

Oryctanthus cordifolius (Presl) Urban. Maskall Pine Ridge, *Gentle* 1175; probably of frequent occurrence; of wide distribution in tropical America. A small parasitic shrub; leaves sessile, broadly ovate, very thick, somewhat narrowed to the obtuse or rounded apex; flowers in thick brownish spikes.

PHORADENDRON Nutt. Mistletoe

Coarse but small, parasitic shrubs with thick leaves; flowers very small, in short dense spikes.—The European mistletoe, although a rather similar plant, belongs to a different genus.

Scales present at the base of all the joints of the branches. Leaves chiefly elliptic, acute at each end.....*P. piperoides.*

Scales present only on the lowest joint of each branch.

Flowers in 2 ranks on each joint of the flower spike.
P. cheirocarpum.

Flowers in 4–6 ranks.

Branches 4-angled.....*P. ceibanum.*

Branches terete.

Leaves very thick, broad, abruptly contracted at the base.
P. robustissimum.

Leaves thin, narrow, long-tapering at the base.
P. Millspaughii.

Phoradendron ceibanum Trelease. Honey Camp, *Meyer* 193; Honduras. Plants glabrous (as in the other species listed here); leaves stalked, oblong to ovate, acute or acutish, acute at the base.

Phoradendron cheirocarpum Trelease. Honey Camp, *Meyer* 192; Guatemala. Leaves about 1.5 cm. wide, narrowly oblanceolate-oblong, rounded at the apex, thin; fruits conspicuously short-stalked.

Phoradendron Millspaughii Trelease. Honey Camp, *Lundell* 563; Yucatan. Leaves narrowly oblanceolate-oblong, about 1.5 cm. wide, very obtuse or rounded at the apex.

Phoradendron piperoides (HBK.) Trelease. *Liga* (Guatemala). *Suelda con Suelda* (Honduras). Common; widely distributed in tropical America. Branches sometimes a meter long, often pendent in dense masses; spikes green or greenish yellow.

Phoradendron robustissimum Eichl. *Suelda con Suelda* (Honduras). Middlesex, *Schipp;* southward to Costa Rica. Leaves oblong or very broadly oblong, rounded at the apex, short-stalked; spikes green.

PHTHIRUSA Mart.

Small parasitic shrubs, forming dense clumps upon trees; leaves small or large, leathery, short-petioled.

Branches densely brown-scurfy; inflorescences small and few-flowered..... *P. phaneroloma.*

Branches glabrous; inflorescences elongate, many-flowered. *P. pyrifolia.*

Phthirusa phaneroloma Standl. Carnegie Inst. Wash. Publ. 461: 55. 1935. Type from Sibun River, *Gentle* 1426. Leaves 3–4 cm. long, elliptic or elliptic-ovate, obtuse or rounded at the apex, brown-scurfy on the margins.

Phthirusa pyrifolia (HBK.) Eichl. *Suelda con Suelda* (Honduras). Frequent; widely distributed in tropical America. A shrub, often pendent in dense tangles; leaves slender-stalked, chiefly oblong, rather thin, glabrous; flowers green, the spikes long and interrupted, the rachis brown-scurfy.

PSITTACANTHUS Mart.

Psittacanthus calyculatus (DC.) Don. *Muérdago* (Yucatan). *Chacxiu* (Yucatan, Maya). Forest Home, on *Ficus, Schipp* 1039; Mexico and Central America. A small shrub; leaves very thick, oblong-lanceolate, narrowed to the tip, curved; flowers bright red, usually 3 cm. long or larger; fruit a large black berry.

STRUTHANTHUS Mart.

Small parasitic shrubs, the branches often long and somewhat twining, glabrous; flowers in clusters of 3, greenish or yellowish.

Leaves orbicular or broadly elliptic..... *S. orbicularis.*

Leaves obovate or cuneate..... *S. cassythoides.*

Struthanthus cassythoides Millsp. Frequent; Yucatan and Guatemala. A slender shrub; leaves short-stalked, rarely rounded; petals 4, linear, 3 mm. long.

Struthanthus orbicularis (HBK.) Blume. Frequent; of wide distribution in tropical America. Leaves conspicuously stalked, rounded at the apex, rounded to acutish at the base.

OLACACEAE. Olax Family

Shrubs or small trees; leaves alternate, entire, without stipules; flowers small, axillary, the calyx 4–6-toothed or 4–6-parted; corolla with 4–6 petals or lobes; stamens twice as many as the corolla segments; fruit a drupe.

Plants unarmed; calyx becoming enlarged and red in fruit. . *Heisteria.*

Plants armed with spines; calyx not enlarged in fruit, green. *Ximenia.*

HEISTERIA Jacq.

Heisteria Chippiana Standl. Field Mus. Bot. 11: 130. 1932. Type from Stann Creek Valley, in forest along creek bank, *Schipp* 970. A glabrous tree 12 meters high, the trunk 30 cm. in diameter; leaves leathery, short-stalked, oblong or lance-oblong, acute or short-acuminate; flowers short-pediceled, the bright red fruiting calyx saucer-shaped, 3 cm. broad or wider, the drupe cream-colored. The wood is of about the consistency of *Liquidambar;* not utilized.

XIMENIA L.

Ximenia americana L. *Cagalera* (Honduras). *Xkukche* (Yucatan, Maya). Occasional in thickets, chiefly along the coast; widely distributed in tropical America. A glabrous shrub or small tree, reported to be sometimes 9 meters high, with a trunk 12 cm. in diameter; leaves oblong to elliptic, thin, deciduous, rounded or obtuse at the apex; flowers small, fragrant, white, in small cymes; corolla densely hairy within; fruit plum-like, yellow, 1.5 cm. long. The edible fruit has juicy, acid flesh. The bark is reported to be astringent, and useful for tanning. Wood orange-brown, very hard and heavy, fine-textured; not utilized.

BALANOPHORACEAE. Balanophora Family

HELOSIS L. Rich.

Helosis mexicana Liebm. Middlesex, in dense forest, *Schipp* S5. A fleshy herb, without chlorophyll, resembling a mushroom, parasitic upon the roots of other plants.

ARISTOLOCHIACEAE. Birthwort Family

ARISTOLOCHIA L.

Vines, usually herbaceous, but sometimes with woody stems. The rays of the wood are very coarse.

Aristolochia Chapmaniana Standl. *Guaco.* Forest Home, *Schipp* S415; also in the Canal Zone. A large vine with a more or less woody stem 5 cm. thick.

Aristolochia grandiflora Swartz. *Guaco* (Yucatan). A large herbaceous vine with enormous flowers whose shape suggests a duck. The flowers, probably the largest produced by any American plant, are also as large as a duck, and they have a slender, pendent, tail-like appendage that is sometimes a meter long. Often called Duck Flower or Pelican Flower in cultivation.

Aristolochia maxima L. *Guaco.* Middlesex, Eldorado, and elsewhere; widely distributed in tropical America. A somewhat woody vine with oblong leaves and relatively small flowers.

Aristolochia pilosa HBK. *Sombrerito* (Guatemala).

Aristolochia Schippii Standl. Field Mus. Bot. 8: 8. 1930. Type from Big Creek, *Schipp* 75. A large, woody vine, the stems covered with corky-ridged bark; flowers yellow, with reddish brown veins; leaves large, triangular-cordate.

Aristolochia trilobata L. *Contrayerba, Country Ebo, Contrebo. Media-luna* (Honduras). Belize-Sibun Road, *Gentle* 16. Used locally as a remedy for fevers.

RAFFLESIACEAE. Rafflesia Family

APODANTHES Poit.

Apodanthes Caseariae Poit. Temash River, *Schipp* S916. A South American species, unknown elsewhere in North America, growing here on branches of *Casearia* sp. A parasite, consisting of sessile flowers only a few millimeters long, subtended by a few scales.

POLYGONACEAE. Buckwheat Family

Herbs, shrubs, or trees; leaves alternate, entire, usually with sheathing stipules (ocreae); flowers mostly very small, with a green or colored perianth of 4–6 segments; fruit a compressed or 3-angled achene.

Plants climbing by tendrils. Sepals cordate, bright pink, the flowers showy.....*Antigonon.*

Plants not climbing, without tendrils.

Herbs.....*Polygonum.*

Trees or shrubs.

Sepals cordate at the base, thin.....*Gymnopodium.*

Sepals not cordate, fleshy and succulent in fruit.....*Coccoloba.*

ANTIGONON Endl.

Antigonon leptopus Hook & Arn. *San Diego Flower.* Corozal District and doubtless elsewhere, but probably only in gardens, or as an escape from cultivation.

COCCOLOBA L.

Shrubs or trees; leaves persistent, usually thick and leathery; flowers small, green or pinkish, in long, often interrupted racemes or spikes; calyx becoming enlarged and fleshy, resembling a berry.—The mature fruits, or rather the calyces, are juicy and have a rather agreeable flavor. They often are eaten, and sometimes are used for the preparation of preserves.

Leaves deeply and narrowly cordate at the base, membranous. *C. cardiophylla.*

Leaves rounded to acute at the base or, if more or less cordate, the blades leathery.

Flowers in panicled racemes.

Leaves thick and leathery, usually conspicuously cordate at the base.....*C. belizensis.*

Leaves thin, usually acute at the base.....*C. Tuerckheimii.*

Flowers in simple spikes or racemes.

Leaves obovate or rounded-obovate, usually rounded at the apex.....*C. reflexiflora.*

Leaves broadest at or below the middle.

Rachis of the inflorescence glabrous.

Leaves lance-oblong, acute or acuminate...*C. cozumelensis.*

Leaves oval or broadly elliptic, obtuse or rounded at the apex.....*C. barbadensis.*

Rachis puberulent.

Leaves broadly oblong or elliptic, acute or acutish. *C. Schiedeana.*

Leaves orbicular or nearly so, broadly rounded at the apex.

Leaves usually broader than long, cordate or emarginate at the base.....*C. Uvifera.*

Leaves fully as long as broad, rounded at the base. *C. Lundellii.*

Coccoloba belizensis Standl. Trop. Woods 16: 38. 1928. *Wild Grape. Uva* (Honduras). Type from Tipperary Road to Silk Grass, *N. S. Stevenson* 7 (Yale 10689); All Pines, broken forest, open pine flats, *Schipp* 794; Honey Camp; Tower Hill Estate; Honduras. A small or rather large tree, often 9 meters high, with a trunk 15 cm. in diameter; leaves large, oval or elliptic, finely pubescent beneath on the costa or almost glabrous; flowers white; fruit reddish green.

Coccoloba barbadensis Jacq. *Wild Grape. Grenada. Uva* (Honduras). Northern part of the Colony; Honduras; West Indies. A glabrous tree 12 meters high or less with short, clean trunk and dense, rounded crown; leaves rather small, cordate or rounded at the base; flowers green.

Coccoloba cardiophylla Standl. Honey Camp, *Lundell* 514; Yucatan. A small, glabrous tree; leaves ovate-rounded, 5–7 cm. long, obtuse or abruptly acute.

Coccoloba cozumelensis Hemsl. Honey Camp, *Meyer* 50; Cozumel Island and Yucatan. A glabrous tree; leaves small, obtuse or acutish at the base.

Coccoloba Lundellii Standl. Field Mus. Bot. 8: 138. 1930. Type from Honey Camp, *Lundell* 649. Leaves thick and leathery, broadly rounded at the apex; racemes much elongate, the pedicels greatly exceeding the ocreolae.

Coccoloba reflexiflora Standl. Field Mus. Bot. 4: 203. 1929. Type from Tower Hill, *Karling* 15; Honey Camp; Campeche; Petén, Guatemala. A small, glabrous tree, the trunk 5–8 cm. in diameter; leaves rather small, thick, obtuse and unequal at the base; racemes recurved, the flowers often reflexed.

Coccoloba Schiedeana Lindau. *Wild Grape. Iril. Bobche* (Yucatan, Maya). Occasional by streams and in thickets; southern Mexico to Honduras. A tree 9 meters high, the trunk 15 cm. in diameter; racemes often much elongate; fruit dull pale purple; flowers whitish.

Coccoloba Tuerckheimii Donn. Smith. *Wild Grape. Uva* (Honduras). Crique Negra, *N. S. Stevenson;* Guatemala and Honduras. A medium-sized tree with large, thin leaves. The dark red wood is very attractive.

Coccoloba Uvifera (L.) Jacq. *Grape. Uva* (Honduras). *Niiche* (Yucatan, Maya). Sea beaches; widely distributed on the beaches of tropical America. A dense, rounded shrub or small tree; leaves almost sessile, stiff and thick; fruit white or purple, as much as 2 cm. long, very juicy. The bark, when cut, yields an astringent red sap, the source of West Indian kino, which formerly was an article of commerce. The usual English name for the plant is Sea Grape. Wood reddish, hard, heavy, strong, fine-textured, fairly durable; little used except for fuel. (For description see *T. of T. A.*, pp. 151–153.)

GYMNOPODIUM Rolfe

Gymnopodium floribundum Rolfe in Hook. Icon. 27: *pl. 2699.* 1901. *Millspaughia leiophylla* Blake, Contr. Gray Herb. 52: 62. 1917. *Bastard Logwood. Cruceto.* Type from Manatee, *Campbell* 60; type of *M. leiophylla* from Manatee Lagoon, *Peck* 320; Corozal District; Petén, Guatemala, and Campeche. A dense shrub 3 meters high with stiff branches; leaves small, obovate, rounded at the apex, shallowly and narrowly cordate at the base, glabrous; flowers in short racemes; sepals 6–7 mm. long.

POLYGONUM L. Smartweed

Polygonum acuminatum HBK.

Polygonum persicarioides HBK.

Polygonum punctatum Ell.

BETA L.

Beta vulgaris L. *Beet. Remolacha.* Cultivated; native of the Mediterranean region.

CHENOPODIACEAE. Goosefoot Family

CHENOPODIUM L.

Chenopodium ambrosioides L. *Wormseed. Apazote* (Yucatan). *Lucumxiu* (Yucatan, Maya). An occasional weed. The seeds are used widely as an agent for expelling intestinal parasites of man.

AMARANTHACEAE. Pigweed Family

All except one of the British Honduras members of the family are herbs, usually of weedy habit.

ALTERNANTHERA Forsk.

Alternanthera Bettzickiana (Regel) Standl. *La Coqueta.* A cultivated plant of American origin. "Supposed to be a natural repellent of the weewee ant. It is claimed that the ants will not pass through, under, or over the plant." (H. P. Smart.)

Alternanthera obovata (Mart. & Gal.) Standl.

Alternanthera polygonoides (L.) R. Br.

Alternanthera sessilis (L.) R. Br.

AMARANTHUS L. Pigweed

Amaranthus caudatus L. *Pison calaloo.*

Amaranthus polygonoides L.

Amaranthus spinosus L. *Spiny amaranth. Bledo* (Yucatan). *Xtez, Kixxtez* (Yucatan, Maya).

Amaranthus viridis L. *A. gracilis* of authors, not Desf. *Bledo* (Honduras).

CELOSIA L.

Celosia argentea L. *Amor seco.* An escape from cultivation, the primitive form of the garden cockscomb (var. *cristata*).

CHAMISSOA HBK.

Chamissoa altissima (Jacq.) HBK. Often a large vine, sometimes becoming somewhat woody.

Chamissoa macrocarpa HBK. Jones Bank, Belize River, *Lundell* 4223. A South American species, known in North America only from this collection.

CYATHULA Lour.

Cyathula achyranthoides (HBK.) Moq. *Mozote* (Honduras).

GOMPHRENA L.

Gomphrena dispersa Standl. *Amor seco* (Yucatan). *Chacmol* (Yucatan, Maya).

Gomphrena globosa L. This common garden plant of American origin, called immortelle, globe amaranth, and bachelor's button, is in cultivation.

IRESINE P. Br.

Iresine Celosia L. *Hierba de Gato* (Honduras).

Iresine nigra Uline & Bray. Caves, Stann Creek Railway, *Schipp* 865; southern Mexico to Honduras and Salvador. A slender, glabrous shrub or tree, sometimes 9 meters high, with a trunk 7.5 cm. in diameter; leaves ovate or lanceolate; flowers minute, white, in small glomerules, these arranged in panicled spikes.

PFAFFIA Mart.

Pfaffia Hookeriana (Hemsl.) Greenm. Hope River; southern Mexico to Panama. A large vine, herbaceous or somewhat woody, sometimes 9 meters long, sparsely pubescent.

PHILOXERUS R. Br.

Philoxerus vermicularis (L.) R. Br. *Xukuk* (Yucatan, Maya). On or near beaches.

NYCTAGINACEAE. Four-o'clock Family

Herbs, shrubs, or trees, sometimes climbing; leaves opposite or alternate, without stipules, entire; flowers small, or large and showy; corolla none, the perianth, however, often corolla-like and brightly colored; fruit an anthocarp, composed of the persistent base of the perianth and an indehiscent utricle, either dry and resembling a seed or fleshy and drupe-like. The woods are of anomalous structure, with very numerous strands of included phloem similar to those in the Urticaceae.

Plants herbaceous.

Flowers large and showy, subtended by a calyx-like involucre of united bracts; fruit terete.....*Mirabilis.*

Flowers minute, the bracts distinct; fruit angled or sometimes sulcate.....*Boerhaavia.*

Plants trees or shrubs.

Plants armed with spines; fruit dry, with stalked glands along the angles.....*Pisonia.*

Plants unarmed; fruit juicy, without glands.

Stamens exserted.....*Torrubia.*

Stamens included in the perianth.....*Neea.*

BOERHAAVIA L.

Boerhaavia caribaea Jacq. *Chacilxiu* (Yucatan, Maya). A common weed, like other species of the genus.

Boerhaavia coccinea Mill.

Boerhaavia erecta L. *Zacxiu* (Yucatan, Maya).

BOUGAINVILLEA Commers.

Bougainvillea glabra Choisy. *Bougainvillea.* A woody vine planted for ornament in most tropical regions. Native of Brazil.

MIRABILIS L.

Mirabilis Jalapa L. *Four-o'clock. Maravilla* (Central America). Cultivated for ornament, and escaping.

Mirabilis violacea (L.) Heimerl.

NEEA Ruiz & Pavón

Shrubs or small trees, the leaves opposite or whorled; flowers small and greenish, arranged in cymes or small panicles, the two sexes on separate plants; fruit an elongate drupe with scant flesh.

Leaves mostly 20–30 cm. long or larger, very long-acuminate. *N. acuminatissima.*

Leaves mostly 6–10 cm. long, acute or short-acuminate. *N. psychotrioides.*

Neea acuminatissima Standl. Eldorado, in forest, *Schipp* 1075; Honduras. A shrub or small tree as much as 6 meters high, with trunk diameter of 7 cm.; leaves oblong or elliptic-oblong, glabrous; drupes 1.5 cm. long, red, dark purple, or pinkish white.

Neea psychotrioides Donn. Smith. Apparently frequent in moist forest; southern Mexico to Panama. A shrub or tree, sometimes as much as 9 meters high, with a trunk 12 cm. in diameter, almost glabrous, but with minute rusty pubescence on the inflorescence; leaves thin, oblong or lanceolate; flowers very small, greenish or reddish, in loose cymes; fruit red or black, 1 cm. long or less. An inconspicuous plant, of no economic importance.

PISONIA L.

Pisonia aculeata L. *Uña de gato* (Yucatan). *Beeb* (Yucatan, Maya). Frequent in thickets; widely distributed in tropical America. A shrub or small tree, densely pubescent or almost glabrous, the branches usually long and more or less climbing or pendent, armed with stout recurved spines; flowers greenish or reddish.

Pisonia macranthocarpa Donn. Smith. Creek banks, Temash River, *Schipp* 1362; southern Mexico to Venezuela. A shrub or a

vine as much as 10 meters long, with a stem 7 cm. in diameter; similar to the preceding species, but the fruits much larger, 1–2 cm. long and 7–10 mm. thick; flowers cream colored.

TORRUBIA Vell.

Torrubia linearibracteata (Heimerl) Standl. Stann Creek Railway, in jungle, *Schipp* 160; Yucatan. A shrub 2 meters high; leaves oblong to oblong-elliptic, acute or obtuse, glabrous; flowers dirty-yellow, minute, in loose cymes; fruit oval.

BATIDACEAE. Batis Family

BATIS L.

Batis maritima L. Seashores or salt flats. Plants herbaceous or suffrutescent.

PHYTOLACCACEAE. Pokeberry Family

MICROTEA Swartz

Microtea debilis Swartz.

PETIVERIA L.

Petiveria alliacea L. *Guinea-hen Root, Skunk-weed. Zorrillo. Payche* (Yucatan, Maya). An herb with garlic-like odor.

PHYTOLACCA L. Pokeberry

Phytolacca icosandra L. *Calaloo, Scorpion Tail. Telcox* (Yucatan, Maya).

Phytolacca rivinoides Kunth & Bouché. *Quilete, Cola de Ardilla* (Honduras). According to Schipp, "the leaves are used as tea" locally. In Central America the young foliage of this and other species often is cooked as a pot herb. The vernacular name *Jocote* accompanying one of the British Honduras specimens probably is the result of some misunderstanding.

RIVINA L.

Rivina humilis L. *Achotillo* (Honduras). *Kuxubcan* (Yucatan, Maya).

BASELLACEAE. Basella Family

BOUSSINGAULTIA HBK.

Boussingaultia leptostachys Moq. New Town, *Schipp* 834. An herbaceous vine.

AIZOACEAE. Carpetweed Family

SESUVIUM L.

Sesuvium Portulacastrum L. A plant of salt flats and marshes.

TRIANTHEMA L.

Trianthema Portulacastrum L.

PORTULACACEAE. Purslane Family

PORTULACA L. Purslane

Portulaca oleracea L. *Verdolaga* (Central America generally). *Xucul* (Yucatan, Maya). The young plants often are cooked and eaten as a pot herb.

Portulaca pilosa L. *Tsayoch* (Yucatan, Maya).

CARYOPHYLLACEAE. Carnation Family

DRYMARIA Willd.

Drymaria cordata Willd.

NYMPHAEACEAE. Waterlily Family

BRASENIA Schreb.

Brasenia purpurea (Michx.) Casp. All Pines, *Schipp* 747. This, like the other members of the family, is an aquatic herb.

CABOMBA Aubl.

Cabomba aquatica Aubl.

NYMPHAEA L. Waterlily

Nymphaea ampla (Salisb.) DC. *Ninfa* (Yucatan). *Naab* (Yucatan, Maya).

Nymphaea blanda Meyer. Forest Home, *Schipp* 1026.

RANUNCULACEAE. Buttercup Family

CLEMATIS L.

Clematis dioica L. *Barbas de viejo* (Yucatan). *Mexnuxib* (Yucatan, Maya). Frequent in thickets; widely distributed in tropical America. A slender, somewhat woody vine with pinnate leaves and white flowers.

MENISPERMACEAE. Moonseed Family

Trees or woody vines; leaves alternate, petiolate, without stipules; flowers small, greenish, dioecious, with 4 or more sepals and 6 petals; stamens as many as the petals or fewer; fruit a 1-seeded drupe or a cluster of drupes.

Leaves not peltate..... *Hyperbaena.*

Leaves peltate, the petiole attached above the base of the blade.

Leaves coriaceous, glabrous; fruit 1.5 cm. long.... *Disciphania.*

Leaves membranaceous, more or less hairy; fruit about 5 mm. long..... *Cissampelos.*

CISSAMPELOS L.

Slender vines, often almost wholly herbaceous; leaves thin, rounded; inflorescences many-flowered; staminate flowers with 4 sepals; fruit a single red or orange drupe.

Bracts of the staminate inflorescence much reduced or absent; leaves densely pilose..... *C. Pareira.*

Bracts large and foliaceous in both staminate and pistillate inflorescence; leaves usually glabrate..... *C. tropaeolifolia.*

Cissampelos Pareira L. *Alcotán* (various parts of Central America). *Tsutsuc* (Yucatan, Maya). Frequent in thickets; widely distributed in tropical America. Climbing over small shrubs or low trees; leaves 3–10 cm. long; fruit 4–5 mm. broad. Rather handsome because of the contrasting red fruits and soft gray leaves.

Cissampelos tropaeolifolia DC. Occasional in thickets or forest; widely distributed in tropical America.

DISCIPHANIA Eichl.

Disciphania coriacea Standl. Carnegie Inst. Wash. Publ. 461: 55. 1935. Type from Río Grande, in forest, *Schipp* S458. A woody vine as much as 18 meters long, the trunk 2.5 cm. in diameter, glabrous; leaves oblong or ovate-oblong, short-acuminate; flowers racemose; fruit yellow.

HYPERBAENA Miers

Vines or small trees; leaves thick and leathery, often lobed or coarsely toothed, short-stalked; flowers very small, in axillary panicles; fruit a rather large drupe. Wood yellowish, hard, heavy, rather fine-textured; structure anomalous, with the included phloem in

concentric bands suggesting *Avicennia;* rays coarse, widening at phloem bands.

Leaves broadest near the apex and usually shallowly 3-lobed or angled..... *H. Winzerlingii.*

Leaves narrowed to the apex, entire.

Leaves pinnate-nerved..... *H. nectandrifolia.*

Leaves palmately 5-nerved at the base..... *H. hondurensis.*

Hyperbaena hondurensis Standl. Jacinto Creek, *Schipp* 1189; also in Honduras. A woody vine as much as 15 meters long, the stems 3.5 cm. in diameter; leaves narrowly oblong-lanceolate to ovate-elliptic, acute or acuminate, obtuse at the base; flowers yellow.

Hyperbaena nectandrifolia Standl. Eldorado, in forest, *Schipp* S390; Yucatan. A tree 9 meters high, the trunk 15 cm. in diameter; leaves large, oblong or lance-oblong, acute or acuminate, obtuse or rounded at the base; fruit yellow.

Hyperbaena Winzerlingii Standl. Trop. Woods 9: 10. 1927. *Knock-me-back. Tkansik* (Maya). Type from Orange Walk District, *Winzerling* V.12; several recent collections have been made at Honey Camp and elsewhere; Yucatan; Campeche. A densely branched tree 6 meters high, the trunk 15 cm. in diameter; leaves leathery, wedge-shaped, long-tapering to the short petiole. The wood is described as very hard, porous, and pale yellow.

ANONACEAE. Custard Apple Family

Shrubs or trees; leaves alternate, entire, without stipules; flowers solitary or clustered, usually perfect, commonly with 3 sepals and 6 fleshy or leathery petals; stamens numerous; fruit of one or more carpels, these sessile or stalked, usually fleshy, free or united to form a many-celled fruit. Woods variable from soft to hard, rather fine-textured, not durable; characterized by fine, closely spaced, concentric lines of parenchyma forming a spider-web pattern with the rays.

Carpels of the fruit fused as a large fleshy mass.

Petals connate into a 3–6-lobed tube, the outer ones with broad wings..... *Rollinia.*

Petals neither connate nor winged..... *Anona.*

Carpels of the fruit distinct, often stalked.

Petals very large, as much as 4 cm. long, brown-purple. Carpels of the fruit sessile..... *Sapranthus.*

Petals much smaller.

Carpels of the fruit opening at maturity; leaves more or less sericeous beneath..... *Xylopia.*

Carpels not opening; leaves not sericeous.

Petals with strongly incurved margins, rounded, very thick and fleshy..... *Cymbopetalum.*

Petals flat or nearly so, often very narrow.

Petals linear or oblong-linear..... *Desmopsis.*

Petals oblong to rounded.

Stamens few (6–18), laxly imbricate..... *Oxandra.*

Stamens very numerous, densely crowded.

Outer petals valvate in bud..... *Unonopsis.*

Outer petals imbricate in bud.

Petals sericeous outside..... *Guatteria.*

Petals glabrous..... *Malmea.*

ANONA L.

Shrubs or trees with persistent or deciduous leaves; flowers usually solitary and lateral on the branches; fruit composed of numerous fleshy carpels crowded together and fused at maturity to form a large, fleshy body.

Flowers globose, as broad as long.

Leaves glabrous, ovate; fruit smooth, glabrous..... *A. glabra.*

Leaves tomentose beneath when young, broadly obovate; fruit densely tomentose, covered with spine-like projections. *A. purpurea.*

Flowers elongate, narrow, more than twice as long as broad.

Leaves densely pubescent beneath, obtuse or acutish. *A. Cherimolia.*

Leaves glabrous or nearly so, long-acuminate.

Leaves 15 cm. long or less, acute at the base..... *A. reticulata.*

Leaves mostly 20–30 cm. long or larger, rounded at the base. *A. testudinea.*

Anona Cherimolia Mill. *Tukib, Pox* (Maya). *Chirimoya* (Yucatan). Honey Camp, perhaps only in cultivation; widely distributed in tropical America, native probably in South America. A small tree; fruit globose or ovoid, the surface with rounded protuberances or marked with U-shaped areoles, sometimes almost smooth. The white pulp is edible and of pleasant flavor.

Anona glabra L. *Corkwood, Alligator Apple, Bobwood. Xmak* (Yucatan, Maya). Widely distributed in tropical America; growing

usually along streams, or often in coastal thickets. A small, glabrous tree; fruit small, ovoid, yellow at maturity. The fruit is scarcely edible.

Anona purpurea Moc. & Sessé. *Oop* (Maya). *Sencuya* (Honduras). *Polbox* (Yucatan, Maya). Occasional in dry forest or thickets; southern Mexico to northern South America. A rather large tree, the trunk sometimes 45 cm. in diameter, with spreading crown; leaves often 20–30 cm. long; flowers brown-purple, pendent; fruit ovoid or subglobose, 15 cm. long, covered with a brown felt, its flesh orange-colored, fragrant, fibrous. The fruit is little eaten, being of poor flavor and quality.

Anona reticulata L. *Oop* (Maya). *Anona* (Central America generally). *Tsulipox* (Yucatan, Maya). Cultivated and perhaps also native; widely distributed in tropical America. A small tree with narrow leaves; fruit often very large, its surface divided into rather obscure, angled areoles, the flesh whitish, sweet, rather insipid. The anona is one of the favorite fruits of Central America, but it usually has little appeal to the northern palate.

Anona squamosa L. This species has been reported from British Honduras as the Wild Custard Apple, but very likely in error. It is known in Central America only in cultivation, and is little planted.

Anona testudinea Safford. In forest, Stann Creek Valley; foot of the Cockscombs; Guatemala and Honduras. A glabrous tree 11 meters high, the trunk 22 cm. in diameter; leaves narrowly oblong, acuminate; flowers greenish yellow; fruit globose, 8–10 cm. in diameter, the surface divided by slightly raised ridges into irregular polygonal areas, the shell thick and hard.

CYMBOPETALUM Benth.

Cymbopetalum penduliflorum (Dunal) Baill. Stann Creek Valley and elsewhere; southern Mexico and Guatemala. A tree 11 meters high, the trunk 25 cm. in diameter; leaves almost sessile, large, oblong, acuminate, glabrate; flowers pendent from long peduncles, 3 cm. broad, greenish yellow; fruit a cluster of narrow, stalked berries 7 cm. long. Schipp describes the wood as soft and cream-colored. This plant is the "sacred ear flower" of the ancient Aztecs. Its concave, thick, fleshy petals, when dried, were employed for flavoring cacao and other articles. The dried petals often are sold today for the same purposes in the markets of Guatemala and Salvador.

DESMOPSIS Safford

Small trees; leaves large, short-petioled, acuminate; flowers borne on young branchlets in the axils of leaves or on naked branches, the petals long and very narrow; fruit a cluster of long-stalked berries.

Leaves glabrous or nearly so.....*D. Schippii.*

Leaves densely pubescent beneath.....*D. stenopetala.*

Desmopsis Schippii Standl. Field Mus. Bot. 11: 130. 1932. Type from Stann Creek Valley, in forest along creek banks, *Schipp* 960. A tree 9 meters high, the trunk 22 cm. in diameter; leaves elliptic; flowers borne in the axils of leaves; petals linear, green turning yellow, 3 cm. long.

Desmopsis stenopetala (Donn. Smith) Fries. Crique Negra, *N. S. Stevenson* 105 (Yale 14889); Guatemalan boundary; Guatemala. A small or medium-sized tree, sometimes 9 meters high, with a trunk 10 cm. in diameter; leaves oblong or elliptic-oblong; flowers borne on old branches; petals 2 cm. long or larger.

GUATTERIA Ruiz & Pavón

Guatteria amplifolia Triana & Planch. Occasional in forest; southward to Panama. A shrub or tree, as much as 9 meters high, with a trunk 12 cm. in diameter, the bark smooth, whitish; leaves on very short petioles, oblong to elliptic, 20–35 cm. long, short-acuminate, glabrate; flowers 3 cm. broad or larger, pale green or cream-colored, with 6 fleshy petals; fruit a cluster of numerous small, oval berries on long, slender, red stalks.

MALMEA Fries

Malmea depressa (Baill.) Fries. *Lancewood, Wild Soursop. Elemuy* (Yucatan, Maya). Frequent in forest; southern Mexico to Honduras. A tree, sometimes 7.5 meters high, with a trunk 10 cm. in diameter, the bark pale and smooth; leaves oblong or elliptic-oblong, 11–17 cm. long, acute or acuminate, thick, glabrous; flowers 5 cm. broad, the large, rounded petals glabrous; fruit a cluster of many ellipsoid berries 1.5 cm. long on slender, red stalks. *Guatteria leiophylla* (Donn. Smith) Safford apparently is referable to this species. Material reported from British Honduras as *G. diospyroides* Baill. likewise probably is to be referred to *M. depressa.*

OXANDRA A. Rich.

Oxandra sp. A collection from Crique Negra, *N. S. Stevenson* 103 (Yale 14887), has been referred to this genus by R. E. Fries.

The specimen in Field Museum is sterile, and therefore not to be placed definitely.

ROLLINIA St. Hil.

Rollinia Jimenezii Safford(?). Middlesex, hill slopes, *Schipp* 408; the species occurs in Costa Rica and Panama, and perhaps farther northward. A tree 9 meters high, the trunk 12 cm. in diameter; leaves large, oblong, acuminate, obtuse at the base, appressed-pilosulous beneath; fruit 3.5 cm. long, globose, with many blunt tubercles, the flesh sour. The specimens have no flowers, and the specific determination is questionable.

SAPRANTHUS Seem.

Sapranthus campechianus (HBK.) Standl. *Sufricaya. Elemuy. Palanco* (Honduras). *Chacmax* (Yucatan, Maya). Honey Camp; Yucatan and Campeche to Honduras. A shrub or small tree; leaves obovate-oblong, short-acuminate, thin, densely pubescent beneath; flowers solitary, ill-scented, the purple-brown petals 4 cm. long or less; fruit of several large sessile berries. The flowers have the odor of carrion.

XYLOPIA L.

Xylopia frutescens Aubl. *Polewood.* Frequent in thickets; southern Mexico to South America. A slender shrub or small tree, the trunk sometimes 22 cm. in diameter; leaves 2-ranked, small, leathery, narrowly lance-oblong, attenuate, pale and sparsely sericeous beneath; flowers small, axillary, whitish; fruit a cluster of red berries, these splitting open when ripe. The slender stems are used for poling boats and dories.

UNONOPSIS Fries

Unonopsis Pittieri Safford. Fair View, wet forest; Jacinto Hills; southward to Panama. A tree 9 meters high, with trunk diameter of 15 cm.; leaves very large, almost sessile, oblong, acuminate, glabrous or nearly so; flowers borne on old, naked branches; fruit a cluster of stalked, orange or black, globose berries.

MYRISTICACEAE. Nutmeg Family

Trees or shrubs, glabrous or pubescent; leaves alternate, entire, stalked, without stipules; flowers small, of 2 sexes on separate plants, often umbellate or panicled, regular; perianth usually 3-lobed, its lobes valvate in bud; fruit fleshy, opening by valves, the single

seed covered by an aril. The woods are of medium density, straight-grained, easy to work, but not resistant to decay or insects. (For descriptions see *T. of T. A.*, pp. 167–171.)

Anthers free from the stamen column; flowers glabrous. *Dialyanthera.*

Anthers adnate below to the stamen column; flowers pubescent.

Stamen column cylindric; aril deeply lobed; leaves usually pubescent beneath..... *Virola.*

Stamen column obconic; aril entire; leaves glabrous. *Compsoneura.*

COMPSONEURA Warb.

Compsoneura Sprucei (A. DC.) Warb. Frequent in forest; Central and South America. A glabrous shrub or tree, sometimes 13 meters high, with a trunk 20 cm. in diameter; leaves short-stalked, lustrous, leathery, oblong or obovate-oblong, short-acuminate, acute at the base; flowers minute, yellowish, in small, lateral, often recurved panicles; fruit oval, 2.5–3 cm. long.

DIALYANTHERA Warb.

Dialyanthera multiflora Standl. Field Mus. Bot. 8: 13. 1930. Type from Stann Creek Railway, Twelve Mile, in forest, *Schipp* 279. A tree 9 meters high, the trunk 10 cm. in diameter; leaves small, petioled, oblong or lance-oblong, acute or acuminate, acute at the base; flowers small, yellowish, umbellate, tomentose, the umbels in small, lateral panicles much shorter than the leaves.

VIROLA Aubl.

Large trees; leaves short-stalked, acute or acuminate; flowers small and inconspicuous, tomentose, in stalked axillary panicles.—These trees are closely related to the nutmeg (*Myristica fragrans*) of the East Indies, and their fruits are similar in size and appearance. The fruits are much sought by rodents and other animals.

Leaves densely tomentose beneath, at least when young, rounded or shallowly cordate at the base..... *V. merendonis.*

Leaves glabrate beneath, acute at the base..... *V. brachycarpa.*

Virola brachycarpa Standl. Field Mus. Bot. 11: 131. 1932. *Banak, Bastard Banak.* Type from Stann Creek Valley, in primary forest, common, *Burns* 20; Big Creek, *Schipp* 858; near Middlesex, *Schipp* 475. A tree 12–15 meters high, the trunk 20–25 cm. in diameter, with smooth bark, the bole very clean, the branches seldom large; leaves small, 14 cm. long or less, long-acuminate, almost glabrous on both surfaces; panicles small and open; fruit 1.5 cm. long.

Virola merendonis Pittier. *Banak. Sangre, Palo de Sangre.* Common in wet forest south of Sibun River; Guatemala to Panama. A tall buttressed tree, often 30 meters high, with a crown of stout, whorled branches and a smooth straight trunk 15–90 cm. in diameter, or as much as 120 cm.; leaves large, oblong, acuminate, glabrous above or nearly so, brownish-tomentose beneath when young and often in age; panicles large and many-flowered; fruit 2.5 cm. long or larger. The seeds are rich in oil. They are strikingly handsome because of the contrast between the shining brown surface and the white or pink, lace-like aril. This species is considered the most important of the secondary timbers of the Colony (see p. 34).

MONIMIACEAE. Monimia Family

Shrubs or small trees; leaves opposite, short-petioled, without stipules, toothed or entire; flowers small, greenish, axillary, in fascicles or small panicles, with 4 sepals, no petals, and usually numerous stamens; fruit of numerous small fleshy carpels.

Anthers dehiscent by longitudinal slits; pubescence of simple hairs. *Mollinedia.*

Anthers dehiscent by valves; pubescence of small stellate hairs. *Siparuna.*

MOLLINEDIA Ruiz & Pavón

Mollinedia guatemalensis Perkins. Frequent in forest; Guatemala. A shrub or tree as much as 6 meters high, the trunk 7 cm. in diameter; leaves oblong-elliptic, almost entire, glabrate; inflorescences much longer than the petioles, often borne at leafless nodes. Wood yellow, not very hard, fine-textured; characterized by conspicuous rays and very small pores; parenchyma lines absent.

SIPARUNA Aubl.

Siparuna nicaraguensis Hemsl. Big Creek, in forest, *Schipp* 140; southern Mexico to Panama. A shrub 4.5 meters high, the trunk 5 cm. in diameter; leaves oblong, acuminate, glabrate, undulate-dentate; flowers small, greenish; fruit reddish. The crushed leaves have a strong odor somewhat suggestive of lemon. Wood yellowish brown, rather soft, fine-textured; parenchyma in very numerous, fine lines between the rays, which are narrow, but high.

LAURACEAE. Laurel Family

Shrubs or trees, rarely epiphytic herbs; leaves alternate, entire, without stipules, usually leathery; flowers small, white, greenish,

or yellowish; perianth 6-lobed; stamens and staminodia usually twice as many as the perianth lobes, the anthers erect, 2- or 4-celled; fruit drupe-like, 1-seeded, surrounded at the base by the persistent cup-like calyx tube, the whole often resembling an acorn with its cup. The woods of the Central American species vary in color from yellowish or olive to reddish, dark brown, or almost black; luster usually satiny; density medium; working qualities excellent; some of the timbers are fragrantly scented, resistant to decay and insects, and suitable for furniture; not commercially known because of the scarcity of the trees.

The family is a difficult one, and the Central American trees of the group, although important economically, are imperfectly understood, chiefly because of the lack of adequate material of them. The differences between most of the genera are based upon stamen characters that are difficult to determine. For this reason, in the following key to the genera, except in the case of groups easily recognizable by other than stamen characters, the individual species of the genera *Ocotea, Nectandra,* and *Phoebe* have been keyed.

Plants small, epiphytic herbs, without leaves.....*Cassytha.*
Plants trees or shrubs with large leaves.
Flowers in stalked heads.....*Misanteca.*
Flowers not in heads.
Sepals very unequal, the outer ones shorter; fruit usually very large and 5 cm. long or more.....*Persea.*
Sepals all equal in size or nearly so.
Leaves densely velvety-pubescent beneath with spreading hairs.....*Phoebe helicterifolia.*
Leaves glabrous beneath, or pubescent, but not with soft, spreading hairs.
Leaves densely but very minutely sericeous beneath, even in age, narrowly oblong-lanceolate, very long-acuminate.
Leaves 3 cm. wide or less.....*Ocotea campechiana.*
Leaves more than 3 cm. wide...*Nectandra membranacea.*
Leaves glabrous or glabrate beneath, usually broader.
Flowers glabrous.....*Ocotea cernua.*
Flowers pubescent.
Leaves conspicuously triplinerved, the 2 principal lateral nerves arising far above the base of the blade.....*Phoebe mexicana.*

Leaves penninerved, the lower lateral nerves arising near the base of the blade.

Branches of the inflorescence very densely sericeous with minute pale hairs..... *Nectandra globosa.*

Branches of the inflorescence glabrous or sparsely pubescent, or the pubescence of spreading hairs.

Leaves with small tufts of hairs beneath in the axils of the nerves..... *Nectandra sanguinea.*

Leaves not tufted beneath.

Veinlets conspicuous and prominent on the upper leaf surface, this very lustrous. *Ocotea Lundellii.*

Veinlets obsolete on the dull upper leaf surface. *Nectandra glabrescens.*

CASSYTHA L.

Cassytha filiformis L. A plant similar in habit and appearance to dodder (*Cuscuta*).

MISANTECA Cham. & Schlecht.

Misanteca capitata Cham. & Schlecht. *Aguacatillo* (Honduras). Middlesex, secondary jungle, *Schipp* S24; southern Mexico to Honduras. An almost glabrous tree 6–9 meters high; leaves short-petioled, oblong to elliptic, large, acuminate, acute to obtuse at the base, leathery; flowers in long-stalked, few-flowered heads in the leaf axils; fruit black, 2 cm. long, half enclosed in a broad deep cup.

NECTANDRA Roland

Trees or shrubs with more or less leathery leaves; flowers small, in axillary or terminal, panicled cymes; perfect stamens 9, those of the first and second series eglandular, the anthers introrsely 4-celled, those of the third series with glands at the base, the anthers extrorsely 4-celled.

Nectandra glabrescens Benth. *Sweetwood. Laurel. Aguacatillo.* Honey Camp and elsewhere; southern Mexico to Colombia. A large or small tree, almost glabrous; leaves lance-oblong to elliptic, acuminate, acute at the base; flowers conspicuously pedicellate.

Nectandra globosa (Aubl.) Mez. *Timber Sweet, Wild Pear. Aguacatillo* (Honduras). A large or small tree; leaves broadly oblong to oblong-lanceolate, acute to acuminate, often finely appressed-

pubescent beneath, but in age usually glabrate; flowers white, rather showy, in usually large panicles.

Nectandra membranacea Griseb. Middlesex, Stann Creek Valley and elsewhere; widely distributed in tropical America. A tree 9–12 meters high, the trunk 15–22 cm. in diameter, or larger; leaves short-petiolate, acute at the base, thick; flowers small, white, the panicles scarcely half as long as the leaves.

Nectandra sanguinea Rottb. *Laurel.* Freshwater Creek, Stann Creek Valley, Honey Camp region, and elsewhere; widely distributed in tropical America. A large or medium-sized tree, almost glabrous; leaves rather small, lustrous, lance-oblong to oblong-elliptic, acute at each end; flowers small, white, the panicles half as long as the leaves.

OCOTEA Aubl.

Trees or shrubs with coriaceous leaves; flowers whitish, in axillary or subterminal panicles; perfect stamens 9, those of the first and second series eglandular, the anthers introrsely 4-celled, those of the third series minute and sometimes wanting; fruit at first included in the thickened perianth tube, later exserted.

Ocotea campechiana Standl. Indian Church, New River Lagoon, *C. S. Brown* 31; Campeche and Petén. A tree of 15 meters, the trunk 35 cm. in diameter; leaves small, narrowly oblong-lanceolate or linear-lanceolate, 4–11 cm. long; flowers umbellate-paniculate, the buds 2–2.5 mm. in diameter.

Ocotea cernua (Nees) Mez. *Aguacatillo* (Honduras). Occasional in forest; southern Mexico, Central America, West Indies. A tree 9 meters high, the trunk 10–15 cm. in diameter, glabrous throughout; leaves slender-petioled, elliptic or oval-elliptic, 10–15 cm. long, abruptly and narrowly long-acuminate, obtuse or acute at the base, leathery; flowers very small, white, often recurved, in small, axillary panicles; fruit black, the cup and pedicel red.

Ocotea Lundellii Standl. Jacinto Hills; Maskall; Petén. A tree of 10 meters with trunk diameter of 25 cm.; leaves lance-oblong to oblong-ovate, 9–12 cm. long, short-acuminate; flowers cymose-paniculate, the panicles shorter than the leaves; fruit black.

PERSEA Gaertn.

Large or medium-sized trees with leathery, deciduous leaves; flowers rather large, in stalked, axillary or subterminal panicles; perfect stamens 9, those of the two outer series eglandular, those

of the third series with a gland on each side at the base; anthers extrorsely 4-celled.

Young branches densely rusty-tomentose; pedicels 8–15 mm. long. *P. Schiedeana.*

Young branches glabrate; pedicels 6 mm. long or shorter. *P. americana.*

Persea americana Mill. *Pear, Butter Pear, Alligator Pear, Avocado. Aguacate. On* (Maya). Cultivated, and also reported as wild, perhaps in error; native, probably, of Mexico and Central America, now grown in all tropical and subtropical regions. In the opinion of many persons, the fruit of this tree is the finest of all tropical fruits. Certainly it is one of those most highly esteemed in Central America.

Persea Schiedeana Nees. *Wild Pear.* Occasional in hill forest; southern Mexico to Panama. A tall tree; leaves large, usually broadly rounded or even somewhat cordate at the base, more or less woolly beneath; flowers 6–8 mm. broad, pale greenish yellow, in age turning crimson or light rose. This wild avocado has a fruit similar to that of *Persea americana,* with a thick but pliable skin and flesh of fine, oily texture and good flavor.

PHOEBE Nees

Trees or shrubs; flowers in axillary panicles; perfect stamens 9, those of the first and second series eglandular, with introrsely 4-celled anthers, those of the third series each with 2 glands at the base, the anthers extrorsely 4-celled.

Phoebe helicterifolia Mez. *Timber Sweet. Laurel.* Big Creek; Freshwater Creek; Mexico to Honduras. A tree 9 meters high, the trunk 22 cm. in diameter; leaves short-petiolate, oblong, acuminate, acute or obtuse at the base; panicles densely pubescent, the small flowers white.

Phoebe mexicana Meisn. *Aguacatillo* (Honduras). Hope Creek, *Schipp* 281; southern Mexico to Costa Rica. An almost glabrous tree 12 meters high, the trunk 22 cm. in diameter; leaves oblong or narrowly oblong, acuminate, acute at the base, often pale beneath; flowers long-pedicellate, sparsely sericeous.

CRUCIFERAE. Mustard Family

BRASSICA L.

Brassica integrifolia (West) Schulz.

Brassica oleracea L. *Cabbage. Repollo.* Cultivated commonly; native of the Old World.

Brassica Rapa L. *Turnip. Nabo.* Cultivated for food; native of the Old World.

CAKILE Mill.

Cakile edentula (Bigel.) Hook. On seashores.

LEPIDIUM L. Peppergrass

Lepidium virginicum L. *Mastuerzo* (Yucatan). *Putxiu* (Yucatan, Maya).

CAPPARIDACEAE. Caper Family

Herbs, shrubs, or trees with alternate, simple or compound leaves, with or without stipules; flowers axillary, or in racemes or corymbs; sepals 4–8; petals 4; stamens elongate, few or many; fruit a capsule or berry.

Leaves simple. Shrubs or trees.....*Capparis.*

Leaves digitately compound.

Fruit a berry; trees or shrubs.

Petals none; fruit sessile.....*Forchammeria.*

Petals 4; fruit stipitate.....*Crataeva.*

Fruit a capsule; herbs.

Pods sessile; plants unarmed.....*Polanisia.*

Pods stipitate; plants often prickly.....*Cleome.*

CAPPARIS L.

Shrubs or small trees, glabrous or variously pubescent; leaves simple, petioled, often leathery; flowers small or large, the petals white; stamens numerous; fruit technically a berry, variable as to form.—Besides the species listed here, another, represented only by incomplete material but probably an undescribed species, occurs in British Honduras.

Leaves densely covered beneath with small brown scales. *C. cynophallophora.*

Leaves glabrous.....*C. Tuerckheimii.*

Capparis cynophallophora L. Without locality, *Castillo;* widely distributed in tropical America. A shrub or small tree; leaves oblong-elliptic, leathery, glabrous above, covered beneath

with brown scales; flowers white or purplish, fragrant, the sepals covered with large brown scales; stamens greatly elongate.

Capparis Tuerckheimii Donn. Smith. Apparently frequent in wet forest; Guatemala and Honduras. A glabrous shrub or small tree; leaves long-stalked, lanceolate to ovate-oblong; flowers large, white, in few-flowered terminal racemes.

CLEOME L.

Cleome serrata Jacq.

Cleome spinosa Jacq.

CRATAEVA L.

Crataeva Tapia L. *Waika Bead. Yuy. Kolokmax* (Yucatan, Maya). Occasional in forest or thickets; widely distributed in tropical America. A small, glabrous tree; leaves long-stalked, the 3 leaflets oblong to elliptic, thin, acute or acuminate, entire, pale beneath; flowers green or purplish, in corymb-like racemes; petals long-clawed; stamens 5–6 cm. long; fruit globose, green or yellowish, 2.5–5.5 cm. in diameter. Wood pale yellow, moderately hard, coarse-textured, fairly easy to work, not resistant to decay, not utilized.

FORCHAMMERIA Liebm.

Forchammeria trifoliata Radlk. *Bastard Dogwood. Tres Marías.* Northern part of the Colony; Yucatan to Salvador. A glabrous tree, reported as sometimes 15 meters high; leaves long-stalked, the 3 leaflets leathery, obovate-oblong, entire; flowers small, green, panicled; fruit small, globose, yellow, the style borne near its base. The wood is of anomalous structure, the included bast being in concentric zones.

POLANISIA Raf.

Polanisia viscosa (L.) DC.

MORINGACEAE. Horseradish Tree Family

MORINGA Juss. Horseradish Tree

Moringa oleifera Lam. *Maranga, Maranga Calalú. Paraíso* (Central America generally). Planted and also naturalized in thickets; native of Africa and the East Indies. A tree 9 meters high or less; leaves alternate, 2–3 times pinnate; flowers white, sweet-scented, panicled, with 5 petals and 5 stamens; fruit a long, slender, pendent, 3-angled capsule with winged seeds. The young

leaves sometimes are cooked and eaten in British Honduras. From the seeds is obtained the ben oil of commerce, employed for lubricating watches and other delicate instruments.

DROSERACEAE. Sundew Family

DROSERA L. Sundew

Drosera capillaris Poir. *Spider Plant.* In Pine forest. The genus has not been discovered in other parts of Central America.

PODOSTEMONACEAE. Podostemon Family

MARATHRUM Humb. & Bonpl.

Marathrum foeniculaceum Humb. & Bonpl. Stann Creek Railway, Twenty-two Mile, *Schipp* 948. An aquatic herb, growing on submerged or partly exposed rocks.

CRASSULACEAE. Orpine Family

BRYOPHYLLUM Salisb.

Bryophyllum pinnatum (Lam.) Kurz. *Hoja de la vida* (Honduras). In gardens and also probably naturalized; native of the Old World tropics.

HAMAMELIDACEAE. Witch-hazel Family

LIQUIDAMBAR L.

Liquidambar Styraciflua L. *Liquidambar.* Reported to occur in some abundance in the higher parts of the Cockscomb Mountains; Mexico to Honduras, and widely distributed in the southeastern United States. A large or medium-sized tree, the bark grayish, furrowed, the young branches usually with corky wings; leaves bright green, with 5 radiating acute lobes; staminate flowers in racemes, the pistillate in large, globose, stalked heads, the heads becoming cone-like and spiny in fruit. A fragrant balsam obtained from incisions in the trunk is used in local medicine in Honduras and other parts of Central America and has been exported to Europe for use in medicine and industry. In the United States the tree is called Red Gum or Sweet Gum, and the timber is of great commercial importance. (For description see *T. of T. A.*, pp. 193–194.)

ROSACEAE. Rose Family

Trees or shrubs; leaves alternate, petiolate, entire or nearly so, with small stipules; flowers small, or large and showy, perfect, with

or without petals; stamens few or numerous; calyx 5-lobed; fruit a drupe.—The tropical members of the family have little superficial resemblance to the better-known temperate plants of the group. The woods are grayish or reddish, hard, heavy, and strong, not resistant to decay. They have rather few, prominent pores, fine rays, and numerous concentric lines of wood parenchyma. The timbers are little used because of their scarcity or poor dimensions. (For further information see *T. of T. A.*, pp. 195–199.)

Leaves palmately compound, with several leaflets; stems armed with prickles..... *Rubus.*

Leaves simple; plants unarmed.

Stamens 3–10.

Petals conspicuous; shrubs or small trees..... *Hirtella.*

Petals none or minute; usually rather large trees..... *Licania.*

Stamens 12 or more.

Fruit with several seeds; flowers in corymb-like panicles. *Photinia.*

Fruit 1-seeded.

Calyx tube elongate, narrow; flowers in racemes or panicles. *Couepia.*

Calyx tube short and broad; flowers in cymes. *Chrysobalanus.*

CHRYSOBALANUS L.

Chrysobalanus Icaco L. *Coco Plum. Icaco* (Central America generally). Frequent on sea beaches; widely distributed in tropical America; western Africa. An almost glabrous shrub, 1.5 meters high or less; leaves small, rounded; flowers small, white, sweet-scented, in axillary cymes; fruit 2–4 cm. in diameter, globose or nearly so, white, pink, purple, or black. A characteristic shrub of sandy beaches, often prostrate. The sweet, white, juicy flesh of the fruit is eaten, but the flavor is not attractive. The bark and leaves are astringent, the seeds rich in oil.

COUEPIA Aubl.

Couepia dodecandra (DC.) Hemsl. *Baboon Cap, Monkey Cup. Munzap* (Honduras). *Uspib* (Yucatan, Maya). Occasional in forests; southern Mexico to Honduras and Salvador. A tree 12 meters high, the trunk 20–25 cm. in diameter; leaves oblong or elliptic, obtuse or acutish, covered beneath with a fine, whitish, felt-like tomentum; flowers small, white, in panicles; fruit ellipsoid, yellow, 5 cm. long

or larger, edible. It is doubtful whether the tree is native in Honduras and Salvador, but it is planted not infrequently even as far south as Costa Rica.

HIRTELLA L.

Shrubs or small trees with abundant pubescence; flowers small but often rather showy, with long-exserted stamens.

Flowers in simple racemes; stamens 5..... *H. racemosa.*

Flowers in narrow panicles; stamens 3.

Leaves sparsely short-pilose beneath; flowers long-pedicellate. *H. triandra.*

Leaves densely velvety-pubescent beneath; flowers sessile or nearly so..... *H. americana.*

Hirtella americana L. *H. guatemalensis* Standl. *Pigeon Plum, Wild Coco Plum. Pasta* (Honduras). Frequent in forest and thickets; widely distributed in tropical America from Central America southward. A shrub or tree, sometimes 18 meters high, with a trunk 12–25 cm. or more in diameter; leaves almost sessile, acute; petals white, the stamens rose-purple; fruit almost 2 cm. long.

Hirtella racemosa Lam. *Wild Coco Plum. Grenada* (Granada?). *Uayamche* (Maya). *Pasta* (Honduras). Frequent in forest and thickets; widely distributed in tropical America. A slender shrub or small tree, sometimes 4.5 meters high, with a trunk 5 cm. in diameter; leaves smaller, oblong or elliptic; flowers pink or purplish, fragrant; fruit plum-like, 1 cm. long, dark red or purplish. The bark of some species of *Hirtella* is said to have been used for tanning.

Hirtella triandra Swartz. *Wild Coco Plum, Wild Pigeon Plum.* Toledo District, *N. S. Stevenson;* Central America, West Indies, and South America. A shrub or small tree; fruits densely pilose; leaves acuminate.

LICANIA Aubl.

Trees; leaves small or large, on very short petioles; flowers small, in panicles; fruit small or often very large.

Leaves white beneath, thin, covered with a dense minute tomentum. *L. hypoleuca.*

Leaves green beneath, leathery, glabrous or nearly so.

Leaves large, mostly 17–25 cm. long, rounded at the base. *L. platypus.*

Leaves small, 8–12 cm. long, acute at the base..... *L. sparsipilis.*

Licania hypoleuca Benth. *Pigeon Plum. Chozo.* In forest or broken pine ridge, frequent; southward to Colombia. A tree 9–12 meters high, the trunk 10–22 cm. in diameter, the twigs very slender; leaves small, oblong, long-acuminate, green and glabrous above; flowers minute, greenish white; fruit red, 1.5 cm. long, constricted near the base.

Licania platypus (Hemsl.) Fritsch. *Monkey Apple. Urraco* (Honduras). In forest, occasional; southern Mexico to Panama. Often a very large tree with thick, pale trunk and usually a narrow, dense crown; leaves narrowly oblong, glabrous, rounded or short-pointed at the apex; flowers in large panicles; fruit obovoid, 13 cm. long or larger, rough and brownish. One of the handsomest of Central American trees because of its beautiful foliage, which when young is tinged with bronze or red; a superior shade tree. The fruit, which requires about a year for maturing, is edible but little esteemed, especially because of a belief that it causes fevers and other ailments. Its flesh is yellow, juicy, somewhat fibrous, and slightly acid.

Licania sparsipilis Blake, Contr. Gray Herb. 52: 67. 1917. Type from Sittee River, in forest, *Peck* 858; Big Creek, *Schipp* 102. A tree 12 meters high, the trunk 12 cm. in diameter; leaves lance-oblong, lustrous, acuminate, almost glabrous; panicles small, little longer than the leaves, the flowers white, fragrant. The wood is said to be red, hard, and close-grained.

PHOTINIA Lindl.

The species here listed is the only one known from Central America.

Photinia microcarpa Standl. Carnegie Inst. Wash. Publ. 461: 57. 1935. Known only from the Guatemalan boundary, the type collected at Camp 32, alt. 800 meters, *Schipp* 1291. A tree of 15 meters, the trunk 25–45 cm. in diameter, the young branches reddish-tomentose; leaves small, oblong or oblanceolate-oblong, acute or obtuse, entire or crenate-serrate toward the apex; flowers small, white; fruit 1 cm. long.

RUBUS L.

Rubus amplior Rydb. Camp 32 on the Guatemalan boundary, *Schipp* S704; Guatemala. A large vine, the stems as much as 7 cm. in diameter. The specific determination is somewhat uncertain because of the unsatisfactory nature of the single specimen seen.

Mr. Schipp states that still another species of the genus occurs in the Colony, but no specimens have been seen by the writer.

CONNARACEAE. Connarus Family

Woody vines; leaves alternate, odd-pinnate, the leaflets leathery, entire; flowers small, whitish, in racemes or panicles, with 5 petals and 10 or fewer stamens; fruit a leathery or woody follicle, its single seed subtended by a fleshy aril.

Leaflets 3; fruit stalked within the calyx..... *Connarus.*

Leaflets more than 3; fruit sessile.

Fruit densely hairy; leaves densely pubescent beneath *Cnestidium.*

Fruit glabrous; leaves glabrous or nearly so..... *Rourea.*

CNESTIDIUM Planch.

Cnestidium rufescens Planch. Frequent in thickets; southern Mexico to Panama; Cuba. A large vine; leaflets 7–13, oblong, acuminate, rusty-tomentose beneath; flowers in rather large panicles; fruit 1–1.5 cm. long.

CONNARUS L.

Large vines; leaves long-petiolate, the leaflets acuminate, glabrous or nearly so; flowers small, whitish, panicled; follicles large, conspicuously stalked, striate-nerved.

Leaflets oblong, mostly 3–4 cm. wide; flowers conspicuously pedicellate..... *C. Lambertii.*

Leaflets oval, 4–6 cm. wide; flowers sessile or very shortly pedicellate. *C. lonchotus.*

Connarus Lambertii (DC.) Britton. Frequent in swampy thickets or forest; ranging to northern South America. Flowers cream-colored, sweet-scented; stems 5–7 cm. in diameter.

Connarus lonchotus Blake, Contr. Gray Herb. 53: 69. 1917. Type from Moho River, *Peck* 727. I have seen no material of this species, which probably is not distinct from the preceding.

ROUREA Aubl.

Woody vines, glabrous or pubescent; leaves pinnate, with few leaflets; flowers small, whitish, in lax panicles.

Calyx glabrous or nearly so; leaflets usually 5 and oblong. *R. glabra.*

Calyx tomentulose; leaflets usually 7 and elliptic..... *R. Schippii.*

Rourea glabra HBK. *Tietie.* Occasional in thickets; Mexico to South America. A large or small, almost glabrous vine; leaflets usually 5, oblong to elliptic, small; panicles few- or many-flowered, pubescent; fruit 10–17 mm. long, the shining, dark brown seed with an orange aril. There is good evidence for believing that the seeds are very poisonous, and they are said to have been employed in some parts of Central America for criminal poisoning. It is reported, also, that people have been poisoned by eating the flesh of birds that had fed upon the seeds.

Rourea Schippii Standl. Carnegie Inst. Wash. Publ. 461: 58. 1935. Type collected in forest, Río Grande, *Schipp* 1168. A vine 12 meters long, the trunk 5 cm. in diameter; leaflets 7–11 cm. long, short-acuminate, glabrous; petals 6–7 mm. long.

LEGUMINOSAE. Bean Family

Herbs, shrubs, or trees, often vines, frequently armed with spines or prickles; leaves chiefly alternate, nearly always compound, provided with stipules; flowers usually resembling those of the bean or pea, but sometimes almost regular; petals normally very unlike, one of them (the banner or standard) being larger than the others, the two lateral ones (wings) narrower, the two lowest (keel) often still smaller and frequently united; sepals more or less united; stamens commonly 10, sometimes 5 or 9 or more than 10; fruit a pod, often resembling a bean pod but frequently greatly modified. One of the largest groups of Central American plants, its members often of great economic importance.

The family is divided commonly into three groups, as keyed below, and these groups sometimes are treated as separate families, but the differences between them are not well marked. In the following keys to genera the herbaceous plants have been omitted.

Flowers regular, the petals all alike and equal or nearly so; petals valvate in bud, usually united below the middle. Stamens distinct or united; leaves bipinnate, except in *Inga*...I. *Mimoseae.*

Flowers irregular, the petals unequal, imbricated in bud, usually distinct.

Uppermost petals in bud within the others; stamens usually distinct; leaves pinnate or bipinnate, rarely simple.
II. *Caesalpinieae.*

Uppermost petals in bud outside the others; stamens frequently united into a sheath; leaves never bipinnate.
III. *Papilionatae.*

I. MIMOSEAE (Mimosaceae)

Leaves once pinnate. Unarmed trees.....*Inga.*

Leaves twice pinnate.

Anthers tipped with a small gland. Flowers in spikes; woody unarmed vines with very large pods.....*Entada.*

Anthers without glands.

Stamens as many as the corolla lobes or twice as many.

Plants armed with prickles; pods breaking up into joints. *Mimosa.*

Plants unarmed; pods not breaking up into joints.

Pods about 3 mm. wide; plants herbaceous or essentially so.....*Desmanthus.*

Pods more than 1 cm. wide; trees or large shrubs. *Leucaena.*

Stamens numerous.

Stamens free. Flowers in heads or spikes; plants unarmed or more often with spines or prickles.....*Acacia.*

Stamens united below.

Valves of the pod separating from the persistent thickened margin. Plants unarmed; flowers in heads; pods thin and flat.....*Lysiloma.*

Valves of the pod not separating from the margin.

Valves of the pod elastically recurved after dehiscence. Plants unarmed; flowers in heads.....*Calliandra.*

Valves not elastically recurved.

Valves of the pod very thin, broad, straight. Plants unarmed; flowers in heads.....*Albizzia.*

Valves of the pod usually thick, often curved or coiled, or twisted. Plants often armed with spines.

Pod very broad, flat, indehiscent, coiled into a circle; unarmed tree; flowers in heads. *Enterolobium.*

Pods various, but usually not coiled, commonly narrow and dehiscent; plants armed or unarmed; flowers in heads or spikes.....*Pithecolobium.*

II. CAESALPINIEAE (Caesalpiniaceae)

Leaves simple.

Leaves bilobate, entire.....*Bauhinia.*

Leaves not lobed, remotely toothed.....*Zollernia.*

Leaves compound.

Leaves, at least most of them, bipinnate.

Pods finely nerved, splitting open along the middle of the thin valves.....*Haematoxylum.*

Pods not nerved, splitting open along the margins, or not opening.

Ovary united with the calyx tube; tree with very large leaves, often a meter long.....*Schizolobium.*

Ovary free from the calyx tube.

Calyx lobes imbricate; valves of the pod thin..*Caesalpinia.*

Calyx lobes valvate; valves of the pod woody.....*Delonix.*

Leaves once pinnate, sometimes with only 2 leaflets.

Leaflets 2; trees.

Ovules 2 in the ovary; pods rough; flowers small, clustered in the leaf axils.....*Cynometra.*

Ovules 3; pods smooth; flowers large, in terminal panicles. *Hymenaea.*

Leaflets more than 2, or only 2 in some species of *Cassia* that are low herbs.

Petals only 1–2 or none.

Calyx entire, closed in bud; stamens numerous..*Swartzia.*

Calyx lobed, open in bud; stamens 2–3.....*Dialium.*

Petals 5.

Anthers erect.....*Cassia.*

Anthers versatile.....*Tamarindus.*

III. PAPILIONATAE (Fabaceae)

Fruit with 4 longitudinal wings, indehiscent.....*Piscidia.*

Fruit not winged, or with winged margins only.

Pods inflated, thin-walled. Unarmed trees; flowers yellow. *Diphysa.*

Pods not inflated.

Leaflets dotted with large translucent oil glands....*Myroxylon.*

Leaflets without translucent glands.

Stamens free.

Pods 1-seeded.....*Ateleia.*

Pods with more than one seed.

Stamens long-exserted; pods very thin.....*Sweetia.*

Stamens included; pods thick.

Calyx shallowly toothed; seeds brown; pods almost terete.....*Sophora.*

Calyx deeply lobed; seeds scarlet and black; pods compressed.....*Ormosia.*

Stamens united below to form a tube, one sometimes free from the others.

Leaves even-pinnate, with an even number of leaflets. A small woody vine; seeds scarlet and black....*Abrus.*

Leaves odd-pinnate, with an uneven number of leaflets, sometimes reduced to a single leaflet.

Fruit samara-like, with a large terminal wing; stipules often indurate and spine-like.

Wing of the fruit reticulate-veined.....*Machaerium.*

Wing of the fruit with numerous transverse parallel nerves.....*Tipuana.*

Fruit not samara-like; stipules not spine-like.

Seeds scarlet; standard petal much longer than the others, linear; leaflets 3.....*Erythrina.*

Seeds not scarlet; standard not linear.

Pods opening at maturity; flowers white, pink, red, or purple.

Leaflets 3.....*Cajanus.*

Leaflets more than 3.

Inflorescences terminal or opposite the leaves; flowers 5.5 cm. long, red.....*Barbieria.*

Inflorescences axillary; flowers smaller, not red.

Style coiled; leaflets not blotched beneath; flowers less than 1 cm. long.....*Lennea.*

Style straight; leaflets blotched with pale purple beneath; flowers 2.5 cm. long. *Gliricidia.*

Pods not opening at maturity.

Fruit drupe-like, subglobose. Flowers deep purple, in large dense panicles; leaflets opposite.....*Andira.*

Fruit compressed, not drupe-like.
Leaflets opposite.
Flowers yellow; ovule 1.....*Platymiscium.*
Flowers pink or purple; ovules usually several.....*Lonchocarpus.*
Leaflets alternate.
Pods winged; flowers yellow.....*Pterocarpus.*
Pods not winged; flowers pink or purple.
Pods coiled to form almost a circle. *Drepanocarpus.*
Pods not coiled.....*Dalbergia.*

I. MIMOSEAE

ACACIA Willd.

Shrubs or small trees, usually armed with spines or prickles; leaves bipinnate, with few or numerous leaflets, bearing glands on the petiole or rachis; flowers small, in heads or spikes; stamens very numerous.

Spines very large, inflated, hollow.
Flowers in globose heads.....*A. Cookii.*
Flowers in short, very dense spikes.
Pods opening only along the ventral edge.....*A. Hindsii.*
Pods opening along both edges.
Leaflets 1-nerved.....*A. Collinsii.*
Leaflets more or less evidently 3-nerved .....*A. costaricensis.*

Spines or prickles slender, small, sometimes absent.
Flowers in spikes.....*A. dolichostachya.*
Flowers in globose heads.
Pinnae mostly 2–5 pairs; pods almost terete in cross section. *A. Farnesiana.*
Pinnae 6–8 pairs or more; pods flat, thin.....*A. glomerosa.*

Acacia Collinsii Safford. Belize River and probably elsewhere; Guatemala and southern Mexico. A shrub or small tree; spines pale or brownish, somewhat united at the base; pinnae and leaflets numerous; fruit terete, 5 cm. long, opening by 2 valves.

Acacia Cookii Safford. *Cockspur, Ant Thorn. Huascanal. A. bucerophora* Robinson, Proc. Amer. Acad. 49: 502. 1913. Type of *A. bucerophora* from British Honduras, *Peck* 632. Occasional in

thickets; Guatemala. A shrub or small tree; pinnae numerous, the numerous leaflets small, linear; flowers yellow, in dense spheric heads. This is one of the Bullhorn Acacias, a small group confined to Mexico and Central America. The large, inflated spines, in pairs and suggesting the horns of an ox, are hollow, and each is inhabited by a separate colony of ants, which enter through a small hole cut for the purpose in the spine. The ants live in part upon nectar bodies borne on the young leaves of the plant. The insects are exceedingly active and sally forth from the spines whenever the plant is molested. They are able to inflict most painful bites. Wood hard, heavy, tough, straight-grained, rather coarse-textured; has about the consistency of Hickory (*Carya*).

Acacia costaricensis Schenck. *Cockspur.* Apparently frequent; southern Mexico to Panama. A shrub or small tree; spines brown or black, often much swollen; pinnae 4–8 pairs, the numerous narrow leaflets 8–10 mm. long; fruit somewhat compressed, 4–6 cm. long, beaked, opening by 2 valves.

Acacia dolichostachya Blake. *Wild Tamarind, Black Tamarind.* Hillbank and elsewhere; Yucatan. A small, unarmed tree; pinnae numerous, the leaflets very numerous, linear-oblong, 3.5 mm. long; flowers pale yellow, the dense spikes 3–7 cm. long; pods flat, thin.

Acacia Farnesiana (L.) Willd. *Kuntich* (Maya). *Aromo* (Yucatan). Occasional in thickets or open places; widely distributed in tropical America. A shrub or small tree, armed with short or long, stout, pale spines; flowers bright yellow, fragrant, in spheric heads; pods glabrous, 5–7.5 cm. long. This shrub is cultivated in southern Europe for its flowers ("cassie flowers" of commerce), from which perfume is prepared. In some regions ink is made from the pods for local use. Wood reddish brown, very hard and heavy, rather fine-textured, probably durable.

Acacia glomerosa Benth. *White Tamarind, Bastard Prickly Yellow, Prickly Yellow, Jim Crow, Wild Tamarind.* Frequent in thickets and open forest; widely distributed in tropical America. A shrub or tree, as much as 12 meters high, with a trunk 25 cm. in diameter, usually armed with scattered short prickles; leaves large, with very numerous oblong leaflets; flowers white, fragrant, in dense heads; pods about 15 cm. long and 3 cm. wide. Wood nearly white, moderately hard and heavy, suitable for veneers and interior construction; not resistant to decay or insects.

Acacia Hindsii Benth. Río Grande, river bank, *Schipp* 1142; Honduras to Mexico. A tree 10 meters high or less, the trunk as

much as 10 cm. in diameter; spines blackish or dark brown, usually very large and strongly compressed; pods 4–6 cm. long, beaked. The specimens made by Schipp are noteworthy because of the fact that they bear no spines and thus are very different in general appearance from the usual, very spiny form.

ALBIZZIA Durazz.

Unarmed trees or shrubs; leaves bipinnate; flowers in solitary or panicled heads or umbels; stamens numerous, united below; pods broadly linear, flat, thin.

Leaflets large, 2–6 cm. long.

Flowers pediceled, in umbels..... *A. Lebbeck.*

Flowers sessile, in heads.....*A. adinocephala.*

Leaflets small, mostly 1–1.5 cm. long.

Leaflets glabrate.....*A. idiopoda.*

Leaflets densely and minutely velvety-pubescent....*A. tomentosa.*

Albizzia adinocephala (Donn. Smith) Britt. & Rose. Occasional in forest; Central America. A large tree, almost glabrous; pinnae 1–3 pairs, the leaflets 2–5 pairs, lanceolate to ovate, pale beneath; flowers yellowish white, in large spherical heads; pods 10–17 cm. long, 1.5–2 cm. wide, glabrous. Wood brownish, moderately hard, strong, coarse-textured; not utilized.

Albizzia idiopoda (Blake) Britt. & Rose, N. Amer. Fl. 23: 44. 1928. *Pithecolobium idiopodum* Blake, Contr. Gray Herb. 52: 70. 1917. *Salem.* Type from pine ridges, Manatee Lagoon, *Peck* 437; Stann Creek Valley; Corozal District; Honey Camp. A tree 20 meters high, the trunk 20–45 cm. in diameter; pinnae 3–4 pairs, the numerous leaflets oblong, obtuse; flowers pedicellate, in spherical umbels. The bark is employed for tanning.

Albizzia Lebbeck (L.) Benth. Corozal District, probably cultivated, or perhaps escaped from cultivation; native of the Old World. A medium-sized tree; pinnae 2–4 pairs, the leaflets 4–9 pairs, oblong or obovate, obtuse, glabrous or nearly so; pods 15–30 cm. long, 2–4 cm. wide, glabrous. (For description of the wood see *Trop. Woods* 18: 23–25.)

Albizzia tomentosa (Micheli) Standl. *Prickly Yellow, Small-leaved Prickly Yellow, Wild Tamarind. A. Hummeliana* Britt. & Rose, N. Amer. Fl. 23: 46. 1928. Hillbank; type of *A. Hummeliana* collected at Hillbank by Record, No. 27; Mexico. A small tree; pinnae 3–4 pairs, the numerous leaflets broadly oblong, obtuse;

flowers sessile, in globose heads; pods 8–10 cm. long, 2–2.5 cm. wide, puberulent. Heartwood brownish, sapwood thick, yellowish, tough and strong, of about the consistency of Hickory (*Carya*); not resistant to decay or insects.

CALLIANDRA Benth.

Unarmed shrubs; leaves bipinnate, with small or large leaflets; flowers small or rather large, in dense heads, purple, red, or white, the numerous stamens long-exserted; fruit flat, straight, the valves recurved after the pod opens.

Pinnae 7–15 pairs; flower heads in terminal racemes or panicles.

Flowers glabrous ..... *C. confusa.*

Flowers strigose ..... *C. Houstoniana.*

Pinnae 1–7 pairs; heads not in racemes or panicles.

Leaflets only one pair to each pinna, coriaceous, large, rounded at the apex ..... *C. yucatanensis.*

Leaflets 3 or more pairs.

Leaflets 3–5 pairs.

Leaflets 3 pairs, membranaceous, broadly rounded at the apex ..... *C. Cookii.*

Leaflets 5 pairs, thick, long-acuminate ..... *C. rhodocephala.*

Leaflets many pairs, small and narrow.

Branches sharply 4-angled ..... *C. tetragona.*

Branches not angled.

Leaflets coriaceous, glabrous or nearly so; heads very large, sessile ..... *C. belizensis.*

Leaflets membranaceous, pilose; heads small, long-stalked ..... *C. portoricensis.*

Calliandra belizensis (Britt. & Rose) Standl. Field Mus. Bot. 4: 309. 1929. *Anneslia belizensis* Britt. & Rose in Standl. Trop. Woods 11: 19. 1927. *Capulín de Corona.* Type from Hillbank, *Winzerling* VII.4; Honey Camp, *Lundell* 148. Reported, probably in error, as a tree 10 meters high; pinnae 2 pairs, the leaflets linear-oblong, 8–12 mm. long, acute; stamens as much as 7 cm. long.

Calliandra confusa Sprague & Riley. *Ichumpich* (Maya). *Cabello de Angel* (Honduras). Probably in pine ridges (exact locality not reported); southern Mexico to Costa Rica. A low, stout shrub, almost glabrous; leaflets very numerous, linear, 6–8 mm. long, acute; corolla 4 mm. long, the stamens 4 cm. long.

Calliandra Cookii (Britt. & Rose) Standl. Collected by Winzerling, without locality; Petén. A slender, glabrous shrub; pinnae 1–2 pairs; leaflets broadly obovate, 1.5–3.5 cm. long, pale beneath, flowers white.

Calliandra Houstoniana (Mill.) Standl. Frequent in open pine woods; southern Mexico to Honduras. A stiff shrub 1.5 meters high, simple or branched; leaflets linear, 4–7 mm. long, often slightly curved; flowers purple-red, the corolla 8–10 mm. long; pods 8–12 cm. long, densely brown-hairy. A showy and handsome plant because of the long, brightly colored stamens.

Calliandra portoricensis (Jacq.) Benth. *Riverain Shrub.* In thickets; Mexico and Central America; West Indies. A slender shrub; leaflets linear-oblong, 8–16 mm. long, obtuse; flowers white; pods 4–10 cm. long, glabrous or nearly so.

Calliandra rhodocephala Donn. Smith. Big Creek, stream banks, *Schipp* S175; Guatemala. A shrub 2 meters high; pinnae 1 pair, the leaflets oblong to lanceolate, 3–10 cm. long; heads short-stalked, the long stamens bright red.

Calliandra tetragona (Willd.) Benth. Camp Six, *Record* 50 (Yale 8818); widely distributed in tropical America. A large shrub; leaflets 6–12 mm. long, ciliate; flower heads white, with very long stamens; pods glabrous, 10–12 cm. long.

Calliandra yucatanensis (Britt. & Rose) Standl. *Old Man's Beard.* Without locality, *Castillo;* Yucatan. A low, stiff shrub; pinnae 1 pair, the leaflets oblong-obovate, glabrous; flowers purple, in small heads.

DESMANTHUS Willd.

Desmanthus virgatus (L.) Willd. Plants essentially herbaceous, sometimes becoming more or less shrubby in age.

ENTADA Adans.

Large, woody vines; leaves twice pinnate, with numerous large leaflets; flowers small, greenish, in dense spikes; stamens 5–10; pods at maturity breaking up into 1-seeded joints. Stems of normal structure; vessels very large and numerous.

Pods more than 10 cm. wide, constricted between the seeds; seeds 5–6 cm. broad ..... *E. gigas.*

Pods usually less than 8 cm. wide, not constricted between the seeds; seeds 2 cm. broad ..... *E. polystachia.*

Entada gigas (L.) Fawc. & Rendle. Occasional in forest; tropics of both hemispheres. A large vine, climbing to the tops of tall trees, the stems compressed and twisted; pinnae 1–2 pairs, the leaflets 4–5 pairs, oblong, 2–8 cm. long, the leaf ending in a tendril; pods usually 1–2 meters long, containing 10–12 seeds, these dark brown or blackish, compressed, smooth. Easily recognized by the immense pods. The seeds are one of the "sea beans" found commonly on tropical coasts.

Entada polystachia (L.) DC. Stann Creek, edge of mangrove swamp, *Schipp;* widely distributed in tropical America. A vine as much as 12 meters long, the stems 7 cm. in diameter; pinnae 2–6 pairs, the leaflets 6–8 pairs, oblong to obovate, 2–4 cm. long.

ENTEROLOBIUM Mart. Ear-tree

Enterolobium cyclocarpum (Jacq.) Griseb. *Tubroos. Guanacaste. Pich* (Yucatan, Maya). Frequent in open forest; Mexico to Venezuela. A giant tree with thick trunk and broad, spreading crown; leaves with very numerous, linear leaflets 10–12 mm. long, pale beneath, glabrous or nearly so; flowers small, white, in dense, globose heads; pods broad and flat, brown, coiled into an almost complete circle in such a manner as to suggest a human ear. The fallen pods, flowers, and leaves are much eaten by cattle. The tree is an easy one to recognize because of its distinctive fruits. It is one of the three or four largest trees inhabiting the forests of Central America. Wood brown of various shades; moderately light and soft, easy to work, takes a smooth finish and is durable; is suitable for furniture and interior trim; timber from Mexico is known in the markets of the United States. (See *T. of T. A.*, pp. 204–207; *Trop. Woods* 18: 25–26.)

INGA Scop.

Mostly medium-sized, unarmed trees; leaves pinnate, with few large leaflets; flowers large, white or greenish, in spikes, racemes, heads, or umbels; stamens numerous, very long and hair-like; fruit a large pod, variable as to form, containing few large seeds, these usually surrounded by a whitish edible pulp.—The copious pulp about the seeds in some of the species is edible, having a pleasant sweet flavor. The trees are abundant in most parts of Central America, particularly in the lowlands. They are much planted in the uplands for coffee shade, being considered the best of all trees for this purpose. The trees are not large enough for lumber and the

wood is not sufficiently durable to be used for railway crossties, fence posts, etc., without preservative material.

Rachis of the leaves broadly winged between the leaflets.

Pods much broader than thick, with very acute or almost wing-like angles; leaflets 3–4 pairs.....*I. Rodrigueziana.*

Pods about as thick as broad, with obtuse angles, leaflets 4–6 pairs.....*I. edulis.*

Rachis of the leaf not winged, or with very narrow and inconspicuous wings.

Flowers in umbels.....*I. Schippii.*

Flowers in spikes or racemes.

Leaflets 5–6 pairs.....*I. Recordii.*

Leaflets 2–4 pairs.

Leaflets copiously hairy on the upper surface...*I. pinetorum.*

Leaflets glabrous on the upper surface or practically so.

Calyx 1–1.5 mm. long.

Corolla 5 mm. long; leaflets 6–8 cm. long ...*I. belizensis.*

Corolla 9–10 mm. long; leaflets 12–15 cm. long. *I. Stevensonii.*

Calyx 3–4 mm. long.

Leaflets 2 pairs.....*I. punctata.*

Leaflets 3 pairs.....*I. leptoloba.*

Inga belizensis Standl. Field Mus. Bot. 4: 307. 1929. Type from Mullins River Road, *Schipp* 24. A tree 12 meters high, the trunk 15 cm. in diameter; rachis very narrowly winged; leaflets 3 pairs, lance-oblong to obovate-oblong, glabrous or sparsely and minutely puberulent; flowers in short head-like spikes.

Inga edulis Mart. *Bribri. Guamo.* Frequent in forest; southern Mexico to Brazil. A tree 9–12 meters high, the trunk 15–30 cm. in diameter; leaflets oblong to elliptic, acuminate, finely pubescent beneath; flowers pubescent, white, in short spikes; calyx 5–8 mm. long; pods 20–30 cm. long or larger, densely pubescent, often twisted.

Inga leptoloba Schlecht. Frequent in forest, especially along streams; southern Mexico to Panama. A tree 7 meters high, with trunk diameter of 10 cm. or more; leaflets oblong or lanceolate, leathery; spikes short and head-like; corolla sericeous; pods flat, 15 cm. long or less, 1.5–2.5 cm. wide, puberulent.

Inga pinetorum Pittier, Contr. U. S. Nat. Herb. 18: 185. 1916. Type from pine ridge near Manatee Lagoon, *Peck* 343; All Pines,

edge of swamp, *Schipp* 767. A shrub 3 meters high; leaflets 2 pairs, acute to rounded at the apex; flowers in spikes, the calyx 7 mm. long, densely hairy; pods compressed, densely hairy, 4.5 cm. long, 2.5 cm. wide.

Inga punctata Willd. *Cuajiniquil* (Honduras). Frequent in forest or thickets; ranging to northern South America. A tree as much as 12 meters high, with trunk diameter of 15 cm.; leaflets lanceolate to elliptic, acuminate, glabrate; flowers white, in short, dense spikes; pods compressed, 10–12 cm. long, 2.5 cm. wide. Wood yellowish, rather light and soft, of medium texture, easy to work, finishes smoothly, is not durable.

Inga Recordii Britt. & Rose in Standl. Trop. Woods 7: 5. 1926. *Bribri, Bribri Macho, Tamatama.* Type from Stann Creek District, *Record;* Middlesex; Big Creek; Guatemala. A tree 8–12 meters high with trunk diameter of 12–15 cm.; leaflets lance-oblong, long-acuminate, leathery, appressed-pilose beneath; flowers in spikes, white, the calyx 4–5 mm. long; corolla sericeous; pods compressed, 2 cm. wide, densely puberulent. Wood brownish gray or with pinkish hue; hard, heavy, straight-grained, rather fine-textured, not durable.

Inga Rodrigueziana Pittier. *Bribri, Tamatama. Guamo.* Common in forest, especially on stream banks; Guatemala. A tree 12 meters high, the trunk 15 cm. in diameter; leaflets large, 3–4 pairs; hairy; flowers white, in dense spikes; calyx 13–15 mm. long; corolla hairy, 3 cm. long; pods large, glabrous or nearly so. Wood pale brown or pinkish, moderately hard, somewhat cross-grained, rather coarse-textured, not durable.

Inga Schippii Standl. Field Mus. Bot. 11: 132. 1932. Type from Banana Bank, base of Cockscomb Mountains, in forest, *Schipp* 538; also Camp 31, Guatemalan boundary. A tree 12 meters high, the trunk 20 cm. in diameter; leaflets 3 pairs, narrowly oblong, acute or acuminate, large, glabrate; flowers white, fragrant, slender-pediceled, the slender calyx almost 1 cm. long.

Inga Stevensonii Standl. Trop. Woods 23: 7. 1930. *Turtle Bone.* Type from Freshwater Creek, *D. Stevenson.* Leaflets lance-oblong, acute or acuminate, glabrous, acute at the base; flowers in short spikes; corolla sparsely and minutely puberulent. (For description of the wood see *Trop. Woods*, loc. cit.)

LEUCAENA Benth.

Leucaena glauca (L.) Benth. *Wild Tamarind. Guaje* (Yucatan). *Uaxim* (Yucatan, Maya). Occasional in thickets; widely

distributed in tropical America. A shrub or small tree, unarmed; leaves bipinnate, the very numerous leaflets narrowly oblong, acute, 7–15 mm. long, almost glabrous; flowers white, in dense, globose, stalked heads in the leaf axils; pods flat, thin, 10–16 cm. long, 1.5 cm. wide.

LYSILOMA Benth.

Lysiloma bahamense Benth. *Salom. Tzalam* (Yucatan, Maya). Occasional in thickets; Yucatan, West Indies, southern Florida. A medium-sized or small tree with gray bark; leaves bipinnate, the pinnae 2–5 pairs, the very numerous leaflets oblong, obtuse, 8–15 mm. long; flowers in globose racemose heads, white; pods linear-oblong, 8–15 cm. long, 2–2.5 cm. wide, the margin at maturity separating from the thin valves.

MIMOSA L.

Herbs, shrubs, or small trees, sometimes woody vines, usually armed with prickles; leaves twice pinnate, the leaflets small or large, few or numerous; flowers small but often showy, in heads or spikes; stamens as many or twice as many as the corolla lobes; pods commonly flat, breaking up at maturity into few or many joints.

Leaflets only two pairs, large.....*M. albida.*

Leaflets more than two pairs, usually numerous, small.

Leaflets mostly 7–12 mm. wide or larger, rhombic, as broad as long; a woody vine.....*M. Recordii.*

Leaflets 5 mm. wide or smaller, oblong or linear.

Pubescence mostly of gland-tipped hairs.....*M. somnians.*

Pubescence of glandless hairs, or absent.

Pinnae 1 or 2 pairs; plants herbaceous.

Petioles prickly; peduncles glabrous.....*M. pinetorum.*

Petioles unarmed; peduncles hairy.....*M. pudica.*

Pinnae more than 2 pairs.

Leaves unarmed; margins of the pods thin, irregularly toothed and fringed.....*M. hemiendyta.*

Leaves prickly; pods with entire margins.

Pods hispid; flowers pink.....*M. pigra.*

Pods glabrous; flowers white.

Leaflets 5–7 pairs.....*M. hondurana.*

Leaflets 14–18 pairs.....*M. scalpens.*

Mimosa albida Humb. & Bonpl. Frequent in pine woods and open places; widely distributed in tropical America. A shrub 1–2 meters high, armed with recurved prickles; pinnae 1 pair, the leaflets 3–8 cm. long, obtuse, densely pubescent; flowers pink, in globose heads; pods 2–3 cm. long, 5 mm. wide, hispid.

Mimosa hemiendyta Rose & Robinson. *Logwood Brush, Bastard Logwood, Catseem Logwood. Citsim* (Maya). Common in Orange Walk District; Campeche and Yucatan. A tree, reported as reaching a height of 22 meters, with trunk diameter of 60 cm., armed with rather few prickles; leaflets numerous, 4–5 mm. long, glabrate; flowers pink, in panicled heads.

Mimosa hondurana Britt. Eldorado, in forest, *Schipp* 1097; Honduras. A large, very prickly vine, as much as 9 meters long, the stem 2.5 cm. in diameter; leaflets small, rhombic, acute, glabrate; flowers white, fragrant, the very numerous small heads panicled.

Mimosa pigra L. *Sensitive Weed. Carbón* (Honduras). Common in wet thickets and in marshes; widely distributed in tropical America. An erect shrub about 2 meters high, armed with stout prickles; leaflets very numerous, linear, 5–8 mm. long; flowers pink; pods 3–8 cm. long, 1 cm. wide.

Mimosa pinetorum Standl. Field Mus. Bot. 11: 131. 1932. Type from Mountain Pine Ridge, El Cayo District, *Bartlett* 11629.

Mimosa pudica L. *Dormilona* (Yucatan). *Xmuts* (Yucatan, Maya). A small annual. The best-known of American "sensitive plants." The leaflets fold together quickly if the plant is disturbed, also in cloudy weather and during darkness. Many other plants of the group Mimoseae have foliage that exhibits similar movements.

Mimosa Recordii Britt. & Rose, N. Amer. Fl. 23: 170. 1928. *Haulback.* Type from Middlesex, *Record;* Sittee River, river bank, *Schipp* 725. A coarse, woody vine, armed with innumerable small, recurved prickles; leaflets 4–6 pairs, the leaflets 4–9 pairs, densely pubescent; flower heads small, white, fragrant, in large panicles.

Mimosa scalpens Standl. Carnegie Inst. Wash. Publ. 461: 58. 1935. A climbing shrub 3–12 meters long, the branches densely armed with recurved prickles; pinnae 3–10 pairs, the numerous leaflets oblong, 2.5–5 mm. wide, acuminate, appressed-pilose; flowers in heads; pods with prickly margins.

Mimosa somnians Humb. & Bonpl. *Zarza* (Campeche). Frequent in pine woods; widely distributed in tropical America. A shrub 1.5 meters high, or a low herb, densely prickly; flowers pink.

PITHECOLOBIUM Mart.

Tree or shrub, armed or unarmed; leaves twice pinnate, the few or numerous leaflets large or small; flowers rather small but often showy, in heads, spikes, or umbels; stamens numerous, united below into a tube; fruit very variable, the valves often thickened or coiled or twisted.

Leaflets more than 3, usually 6 to many, pairs.

Flowers pediceled, in umbels or racemes.

Leaflets densely soft-pubescent.....*P. Saman.*

Leaflets glabrous or nearly so, sometimes minutely puberulent.

Leaflets about 1 cm. long...*P. halogenes.*

Leaflets 2–5 cm. long, obovate or broadly oblong.

Corolla densely tomentose or sericeous with white hairs; glands of the leaves all small.....*P. leucocalyx.*

Corolla puberulent; gland between the lowest pair of pinnae large and cupular.....*P. macradenium.*

Flowers sessile, in heads or spikes.

Flowers in spikes.

Pinnae 2–4 pairs.

Leaflets oval or oblong, rounded at the apex..*P. Peckii.*

Leaflets oblong-lanceolate, tapering to the apex. *P. pistaciifolium.*

Pinnae 10–15 pairs.....*P. macrandrium.*

Flowers in globose heads.

Leaflets less than 1 cm. long.....*P. albicans.*

Leaflets more than 1 cm. long, usually much longer.

Leaflets lance-oblong, acute or acuminate. *P. Donnell-Smithii.*

Leaflets oblong to ovate, obtuse to rounded at the apex.

Leaflets glabrous; peduncles not bracted. *P. graciliflorum.*

Leaflets pubescent, sometimes glabrate in age; peduncles bearing a single bract.....*P. erythrocarpum.*

Leaflets 1 or 2 pairs.

Corolla glabrous or nearly so; plants unarmed.

Valves of the pods more or less coiled after dehiscence; leaflets rounded or very obtuse at the apex; peduncles much longer than the flower heads.....*P. keyense.*

Valves not coiled after dehiscence; leaflets mostly acute or acutish; peduncles usually shorter than the heads.

Flowers in globose heads; calyx 1 mm. long...*P. belizense.*

Flowers in short spikes; calyx 2 mm. long....*P. Recordii.*

Corolla densely pubescent; plants usually armed with spines.

Leaflets glabrous or essentially so.

Pods terete, about 2 cm. thick.....*P. pachypus.*

Pods somewhat compressed, about 1 cm. thick.

P. lanceolatum.

Leaflets conspicuously pubescent beneath.

Leaflets velvety-pubescent, rounded at the apex, the veins not conspicuous beneath.....*P. Brownii.*

Leaflets sparsely hirsute beneath, acute or abruptly pointed, the veins elevated and very conspicuous beneath.

P. Johanseni.

Pithecolobium albicans (Kunth) Benth. *Huisache* (Campeche). *Chucum* (Yucatan, Maya). Corozal District; Yucatan and Campeche. A tree sometimes 20 meters high, the trunk 18 cm. in diameter, armed with short prickles; leaflets numerous, linear-oblong, mostly 3–6 mm. long; flower heads panicled; pods flat and thin, 10 cm. long, finely brown-pubescent. In Yucatan the wood is said to be used for construction, and the bark for tanning skins.

Pithecolobium arboreum (L.) Urban. *Wild Tamarind. Barba de Jolote* (Honduras). Middlesex, *Hope;* Central America, West Indies. An unarmed tree 9–18 meters high with broad, open crown; leaflets very numerous, 8–12 mm. long, glabrous; flowers greenish white, in long-stalked, globose heads 2.5 cm. broad; pods somewhat fleshy, slender, red, pendent, twisted, the seeds black. Wood reddish brown, moderately hard, easy to work, finishes smoothly, has good cabinet qualities, is durable. (See *T. of T. A.*, pp. 209–210.)

Pithecolobium belizense Standl. Field Mus. Bot. 4: 212. 1929. *Inga Peckii* Robinson, Proc. Amer. Acad. 49: 502. 1913; *Zygia Peckii* Britt. & Rose, N. Amer. Fl. 23: 39. 1928. Type *Peck* 673, without locality; collected also by Record. An almost glabrous tree; leaves nearly sessile, the pinnae 1 pair, the leaflets 2–3 pairs, oblong, acuminate, 9–18 cm. long; pods 13 cm. long and 2 cm. wide, somewhat curved.

Pithecolobium Brownii Standl. Trop. Woods 18: 30. 1929. *Red Fowl.* Type from Hillbank, along lagoons and rivers. *C. S.*

Brown 28. A tree 9 meters high, with trunk diameter of 50 cm., armed with short spines; pinnae 1 pair, the leaflets 1 pair, broadly oblong, 5 cm. long; flowers in short, dense spikes. Sapwood yellow, heartwood brown, very hard, heavy, tough, and strong, of medium texture, probably durable; not utilized.

Pithecolobium Donnell-Smithii (Britt. & Rose) Standl., comb. nov. *Cojoba Donnell-Smithii* Britt. & Rose. *John Crow Bead.* Río Blanco Branch; Big Creek; Guatemala and southern Mexico. A shrub or a large tree; pinnae 2–7 pairs, the numerous, narrow leaflets 1–2 cm. long or even larger, pubescent; flowers white, fragrant. Wood pale brown, of medium density, coarse-textured, not durable.

Pithecolobium erythrocarpum Standl., nom. nov. *Cojoba Recordii* Britt. & Rose, N. Amer. Fl. 23: 31. 1928. Frequent in forest; type collected near the Botanic Station, lower Belize River, *Record.* A shrub or small tree, 1–6 meters high, the trunk sometimes 12 cm. in diameter; pinnae 2–3 pairs, the numerous leaflets thin; flowers white; pods much elongate and slender, much twisted after dehiscence, red.

Pithecolobium graciliflorum Blake, Contr. Gray Herb. 52: 69. 1917. *Cojoba graciliflora* Britt. & Rose, N. Amer. Fl. 23: 31. 1928. Type from Toledo, *Peck* 921. Pinnae 2–3 pairs, the leaflets 6–12 pairs, thin, 1–4.5 cm. long; calyx 4 mm. long.

Pithecolobium halogenes Standl. Carnegie Inst. Wash. Publ. 461: 59. 1935. Type from Punta Gorda, in mangrove swamp, *Schipp* 1196. A tree 10 meters high, the trunk 20 cm. in diameter, unarmed; pinnae 5 or 6 pairs, the leaflets numerous, glabrous, or, when young, slightly sericeous; racemes short and head-like, the corolla glabrous or nearly so; fruit compressed, coiled, the seeds gray and black.

Pithecolobium Johanseni Standl. Cocquericot, *Bartlett* 12070; Honduras. A shrub or small tree; branchlets hirsute; leaflets 4, broadly obovate, 4–6 cm. long; pods very thick, curved, 6 cm. long, 1.5–2 cm. wide.

Pithecolobium keyense Britton. All Pines, edge of mangrove swamp, *Schipp* 748; Yucatan, West Indies, southern Florida. A tree 4.5 meters high, the trunk 7 cm. in diameter; leaflets usually 4, obovate, thick, glabrous, 3–7 cm. long; flowers in globose heads, salmon-colored, fragrant; pods curved or coiled, 8–10 mm. wide.

Pithecolobium lanceolatum (Humb. & Bonpl.) Benth. *Red Fowl. Siemche* (Maya). *P. Winzerlingii* Britt. & Rose, N. Amer. Fl. 23: 193. 1928 (type from Hillbank, *Winzerling* I.2). Frequent

in thickets; Mexico to Venezuela. A spiny shrub or tree, about 7 meters high, with trunk diameter of 10 cm. or more; leaflets 4, leathery, glabrous, 2–7 cm. long, rounded to acutish at the apex; flowers white, in short, dense spikes; pods subterete, 8–15 cm. long, 1 cm. wide, the valves much twisted after dehiscence.

Pithecolobium leucocalyx (Britt. & Rose) Standl. *Wild Tamarind.* Hillbank, *C. S. Brown;* Guatemala and Tabasco. An unarmed tree; pinnae 2 or 3 pairs, the leaflets 4–6 pairs, 2–5 cm. long, rounded at the apex; stamens 3–4 cm. long; pods glabrous.

Pithecolobium macradenium Pittier. Westmoreland, along creek bank, *Schipp* 1024; Panama. A tree 15 meters high, the trunk 45 cm. in diameter, unarmed; pinnae usually 3 pairs, the leaflets 5–8 pairs, thick, rounded at the apex, 2–5 cm. long; pods 10 cm. long and 2 cm. wide, flat, hard.

Pithecolobium macrandrium Donn. Smith. *Prickle Wood.* Hillbank, *Winzerling;* Guatemala. A tree armed with stout spines; leaflets oblong, obtuse or rounded at the apex, 1–2 cm. long, pale and minutely pubescent beneath; spikes very thick and dense.

Pithecolobium pachypus Pittier. Northern River, *Gentle* 989; Veracruz to Salvador. A small tree, armed with stout spines; leaflets 1 pair, ovate to oblong, obtuse or acutish, 3–5 cm. long, conspicuously veined; spikes long and very dense; stamens very long, their tube exserted; pods 6–8 cm. long.

Pithecolobium Peckii Blake, Contr. Gray Herb. 52: 71. 1917. Type material, *Peck* 738 and 829, without definite locality. A small gnarled tree, armed with spines; pinnae 2–3 pairs, the leaflets 5–11 pairs, oval or oblong, 1–2.5 cm. long, rounded at the apex; spikes 2–3.5 cm. long; pods coiled, 1.5 cm. wide.

Pithecolobium pistaciifolium Standl. Type from river bank, Río Grande, *Schipp* 1260. A tree 10 meters high, the trunk 20 cm. in diameter; stipules persistent and indurate, spinelike; leaflets 7 or 8 pairs, 1–3 cm. long and 5–8 mm. wide; flowers white, in short spikes; corolla glabrous.

Pithecolobium Recordii (Britt. & Rose) Standl. Field Mus. Bot. 4: 212. 1929. *Zygia Recordii* Britt. & Rose in Standl. Trop. Woods 7: 6. 1926. *Turtle-bone.* Type collected along the bank of New River, near Guinea Grass, *Record;* Sittee River, *Schipp* 621, 749; Guatemala. A tree 9 meters high, with trunk diameter of 12–20 cm., growing on stream banks; leaves almost sessile, the pinnae 1 pair, the leaflets 1–2 pairs, oblong to ovate, acute or obtuse,

glabrous, 4–9 cm. long; flowers small, white, the peduncles clustered on old wood; pods 5–16 cm. long, 1 cm. wide.

Pithecolobium Saman (Jacq.) Benth. *Cenícero* (Guatemala). Corozal District and elsewhere; Yucatan and Central America to Brazil. A tall tree with very thick trunk and spreading, rather open crown; pinnae 2–6 pairs, rhombic, 2–4 cm. long, obtuse, pubescent beneath; flowers pinkish, in long-stalked umbels; pods fleshy, almost straight, 10–20 cm. long. The pods contain a sweet pulp, and they are eaten by cattle. The leaflets are said to fold together in cloudy weather, hence the name of Rain Tree often given to this species. Sections of the large trunks often are used in Central America as cart wheels. Sapwood thin and white, heartwood dark walnut-brown, often beautifully figured; of medium hardness, usually cross-grained, fairly strong, takes a beautiful finish and is suitable for interior trim and furniture. (See *T. of T. A.*, p. 204.)

II. CAESALPINIEAE

BAUHINIA L.

Shrubs or small trees, sometimes scandent, frequently armed with spines, the stems often compressed; leaves simple and palmately nerved, bilobate, or sometimes composed of 2 leaflets; flowers mostly large and showy, in racemes; fruit flat, indehiscent or bivalvate.

Leaves composed of 2 leaflets.....*B. sericella.*

Leaves simple, deeply or shallowly bilobate.

Leaves almost entire, very shallowly bilobate at the apex.
B. emarginella.

Leaves deeply bilobate.

Lobes of the leaves very obtuse or rounded; pubescence of the flowers brown.....*B. glabra.*

Lobes of the leaves acute or acutish; pubescence of the flowers whitish or grayish.....*B. divaricata.*

Bauhinia divaricata L. *Cowfoot. Pata de vaca. Tsulubtok* (Yucatan, Maya). Frequent in thickets; Mexico, Central America, West Indies. A slender shrub 1–3 meters high; leaves glabrous, bilobed to the middle, pale beneath, the lobes acutish; flowers white, in lax racemes, with long, narrow petals; pods flat, linear, opening elastically.

Bauhinia emarginella Standl. Carnegie Inst. Wash. Publ. 461: 60. 1935. Type from Camp 32, Guatemalan boundary, *Schipp*

S630. A tree of 9 meters, the trunk 9 cm. in diameter, unarmed; leaves 9–14 cm. long, slightly hairy beneath; petals 2 cm. long.

Bauhinia glabra Jacq. *Pata de vaca* (Yucatan). *Cibix quibix* (Yucatan, Maya). An unarmed, scandent shrub; leaves more or less brown-sericeous beneath; flowers in long racemes; pods 2–3-seeded, densely pubescent.

Bauhinia sericella Standl. Carnegie Inst. Wash. Publ. 461: 60. 1935. Type from Jacinto Creek, *Schipp* 1197. A woody vine as much as 15 meters long, unarmed, provided with coiled tendrils; leaflets semiovate, acute, 5 cm. long, minutely sericeous beneath; flowers cream-colored, the petals 12 mm. long; pods densely brown-sericeous.

CAESALPINIA L.

Trees or shrubs, usually unarmed, rarely prickly; leaves bipinnate; flowers racemose, usually large and showy; fruit variable, dehiscent or indehiscent. The woods are usually hard, heavy, and highly colored; some species are the source of important timbers of commerce, but those in British Honduras are too small or infrequent to be utilized.

Pods short and broad, almost as broad as long, covered with long stiff prickles.

Stipules leaf-like; bracts of the raceme reflexed; seeds gray. *C. crista.*

Stipules subulate; bracts suberect; seeds yellow.....*C. Bonduc.*

Pods linear, unarmed.

Lower lobe of the calyx deeply laciniate.....*C. violacea.*

Lower lobe of the calyx not laciniate.

Leaflets densely soft-pubescent.....*C. Recordii.*

Leaflets glabrous or nearly so.

Pedicels much longer than the flowers; leaflets oblong or oval, twice as long as broad.....*C. pulcherrima.*

Pedicels shorter than the flowers or about equaling them; leaflets less than twice as long as broad.....*C. Gaumeri.*

Caesalpinia Bonduc (L.) Roxb. El Cayo, *Bartlett;* West Indies; Asia. A low shrub, or a vine, armed with stout, recurved prickles; leaflets 4–8 cm. long, oblong to elliptic; flowers yellow, in long, stout racemes; pods 6–12 cm. long.

Caesalpinia crista L. Sittee River, *Schipp;* widely distributed in the tropics of both hemispheres, usually on seashores. A low,

dense shrub or a long, coarse vine, armed with stout, recurved prickles; leaflets oblong to elliptic, 3–7 cm. long; pods 5–10 cm. long. The English name is Nickernut.

Caesalpinia Gaumeri Greenm. *Peccary Wood, Warree Wood, Bastard Logwood. Citinche* (Yucatan, Maya). Freshwater Creek and elsewhere, common in low lands; Guatemala, Yucatan. A tree as much as 18 meters high, with trunk diameter of 75 cm., unarmed; leaflets numerous, rhombic, 2–3 cm. long; flowers large, yellow, in long or short racemes; pods flat, elastically dehiscent.

Caesalpinia pulcherrima (L.) Swartz. *Flambeau Flower. Kansik* (Maya). *Guacamaya* (Honduras). *Zinkin* (Yucatan, Maya). Cultivated for ornament and perhaps escaping; widely distributed in tropical America. A glabrous shrub or small tree, often armed with long, slender bristles; leaflets numerous, 1–2.5 cm. long, obtuse, oblong; flowers very large, red or yellow; pods large, flat, elastically dehiscent.

Caesalpinia Recordii Britt. & Rose, Trop. Woods 7: 6. 1926. *Poincianella Recordii* Britt. & Rose, N. Amer. Fl. 23: 329. 1930. *Warree Wood, Peccary Wood, Bastard Billy Webb. Caramayo.* Apparently frequent; type collected in British Honduras by Record. An unarmed shrub or small tree; leaflets few, oblong, obtuse, 3–5 cm. long; flowers large, yellow, in long racemes; pods linear-oblong, densely pubescent, 2–2.5 cm. wide.

Caesalpinia violacea (Mill.) Standl. *Brasiletto. Robinia violacea* Mill.; *C. cubensis* Greenm. Occasional; Yucatan, Cuba, Jamaica. A medium-sized tree; leaflets numerous, elliptic to oblong, glabrate; flowers yellow, in long racemes; pods flat and thin, oblong, 2.5–3 cm. wide.

CASSIA L.

Herbs, shrubs, or trees, unarmed; leaves pinnate, the leaflets large or small; flowers chiefly yellow and large and showy, racemose, panicled, or solitary; fruit various in form, dehiscent or indehiscent.

Pods flat and thin, linear, elastically dehiscent; herbs.

Leaflets 1–3 pairs.

Leaflets one pair.

Stems glabrous; sepals many-nerved.....*C. diphylla.*

Stems pilose; sepals not many-nerved.....*C. rotundifolia.*

Leaflets 2–3 pairs.

Flowers in terminal racemes; plants viscid-hairy..*C. Killipii.*

Flowers axillary; plants without viscid hairs.

Pods 1–4-seeded; sepals not many-nerved; plants prostrate. *C. Tagera.*

Pods many-seeded; sepals many-nerved; plants erect. *C. Bartlettii.*

Leaflets many pairs.

Leaflets mostly 20–40 pairs, coriaceous; branches zigzag. *C. flexuosa.*

Leaflets usually less than 20 pairs, thin; branches not zigzag. *C. stenocarpa.*

Pods various, but never elastically dehiscent; herbs, shrubs, or trees.

Leaflets 2 pairs, acute or acuminate. Fruit terete.

Leaflets copiously hairy beneath.....*C. oxyphylla.*

Leaflets glabrous beneath or nearly so.

Bracts of the inflorescence large, green, persisting; leaflets lustrous above, green beneath; flowers greenish yellow. *C. undulata.*

Bracts small, inconspicuous, early deciduous; leaflets dull, pale beneath; flowers pale buff.....*C. bacillaris.*

Leaflets more than 2 pairs or, if rarely only 2 pairs, then rounded at the apex.

Petiole with a large gland at its base. Herb; leaflets long-acuminate.....*C. occidentalis.*

Petiole without a gland at its base.

Pods very large, terete, 15–90 cm. long, indehiscent or only tardily opening. Large trees.

Flowers pink; leaflets oblong, rounded at the apex. *C. grandis.*

Flowers yellow; leaflets sometimes acute, or broader than oblong.

Leaflets 3–8 pairs, glabrous; pods often 60 cm. long. *C. Fistula.*

Leaflets mostly 8–15 pairs, pubescent beneath; pods 15–30 cm. long.....*C. spectabilis.*

Pods much smaller, often flat, usually dehiscent.

Leaves without glands.

Plants armed with recurved prickles.....*C. petensis.*

Plants unarmed.

Leaflets densely velvety-pubescent.....*C. emarginata.*
Leaflets glabrous or nearly so.
Fruit flat, not winged.....*C. reticulata.*
Fruit with broad longitudinal wings.....*C. alata.*
Leaves with glands between the leaflets.
Pods 4 cm. long or less, deeply constricted between the seeds.....*C. uniflora.*
Pods much longer, not constricted between the seeds.
Fruit terete, usually 12–15 mm. in diameter.
C. bicapsularis.
Fruit compressed, less than 6 mm. wide.
Pods 4 mm. wide.....*C. leiophylla.*
Pods 2.5 mm. wide.....*C. Tora.*

Cassia alata L. *Flor del Secreto* (Yucatan). El Cayo and elsewhere; widely distributed in tropical America. A shrub 2–4 meters high; leaflets numerous, oval to oblong, 6–17 cm. long, rounded at the apex; flowers large, pale yellow, in racemes; pods 15 cm. long. An ointment prepared from the plant is used in various regions as a remedy for ringworm.

Cassia bacillaris L. Stann Creek Valley; widely distributed in tropical America. A shrub or small tree, sometimes 7.5 meters high; leaflets large, ovate to elliptic; flowers large and showy. Wood yellow, rather light and soft, fine-textured, easy to work, finishes very smoothly; no known uses.

Cassia Bartlettii Standl. Field Mus. Bot. 11: 132. 1932. Type from Mountain Pine Ridge, El Cayo District, *Bartlett* 11649; All Pines; Cornhouse Creek; Baldy Sibun. A stiff, erect shrub or herb as much as 1.5 meters high; leaflets small, obovate-oblong, finely nerved; flowers large, bright yellow.

Cassia bicapsularis L. *Wild Currant, Wood Creeper. Alcaparrillo* (Yucatan). In thickets; widely distributed in tropical America. A slender shrub; leaflets oval, rounded at the apex, 1–3.5 cm. long, glabrous or pubescent; flowers large, yellow, in few-flowered racemes.

Cassia diphylla L. Honey Camp region and elsewhere.

Cassia emarginata L. *Barba de Jolote. Xtuab* (Yucatan, Maya). Corozal District; widely distributed in tropical America. A shrub or small tree; leaflets few, oblong to rounded-oval, rounded at the apex; flowers yellow or orange, in racemes; pods flat, thick, 1–1.5 cm. wide, indehiscent. Wood bright greenish yellow, hard

and heavy, fine-textured, takes a beautiful polish, appears durable; not utilized.

Cassia Fistula L. *Cañafístula.* Planted and perhaps also naturalized; native of tropical Asia. A medium-sized tree; leaflets acutish, 7–20 cm. long; flowers large, yellow, in lax, drooping racemes 30–50 cm. long.

Cassia flexuosa L. El Cayo District and elsewhere.

Cassia grandis L. *Stinking Toe, Bookoot, Bookut, Beef-feed. Carao* (Honduras). A large tree with spreading crown, often 12 meters high or more; leaflets numerous, oblong, 3–5 cm. long, densely hairy beneath; flowers large, in long racemes; pods 45–60 cm. long and 3.5 cm. thick, filled with dark pulp and large seeds. The pulp has laxative properties and is much used in domestic medicine. The tree is a remarkably beautiful one in flower, the color and appearance of the blossoms reminding one of apple trees. Wood brownish yellow, rather hard and heavy, coarse-textured, not durable; not utilized.

Cassia Killipii Rose. All Pines; El Cayo District.

Cassia leiophylla Vog. Mullins River Road. A coarse, erect herb, sometimes more or less shrubby.

Cassia occidentalis L. *Frijolillo* (Honduras).

Cassia oxyphylla Kunth. Occasional in thickets; widely distributed in tropical America. A large shrub or small tree; leaflets large, oblong to elliptic, thick, long-acuminate; flowers large and showy.

Cassia petensis (Britt. & Rose) Standl. *Pseudocassia petensis* Britt. & Rose. El Cayo District; Petén. Branches armed with pairs of stout, curved prickles; leaflets mostly 3 or 4 pairs, oblong-elliptic, obtuse, densely pubescent beneath; flowers yellow, in short, dense racemes; pods long and narrow, compressed, as much as 30 cm. long and 1.5 cm. wide.

Cassia reticulata Willd. *Baraja* (Honduras). *Yaaxhabin* (Yucatan, Maya). Corozal District; widely distributed in tropical America. A coarse shrub or small tree, 3–6 meters high; leaflets numerous, oblong, 8–10 cm. long or larger; flowers large, in dense racemes, the sepals and bracts orange, the petals bright yellow; pods 1.5–2 cm. wide. A showy plant when in flower. The leaflets fold together in the evening, remaining folded until sunrise or later.

Cassia rotundifolia Pers. Collected by Peck.

Cassia spectabilis DC. Frequent; widely distributed in tropical America. A tree as much as 7 meters high with spreading crown; leaflets oblong to oblong-ovate, acute, 3–6 cm. long; flowers large, yellow, panicled. Wood yellow, light, rather soft, medium-textured; not utilized.

Cassia stenocarpa Vog.

Cassia Tagera L. Occasional in pine forest.

Cassia Tora L.

Cassia undulata Benth. Frequent in thickets; widely distributed in tropical America. A shrub or small tree, often somewhat scandent, 6 meters high or less; leaflets oblique, lance-oblong or ovate-oblong, 4.5–9 cm. long.

Cassia uniflora Mill.

CYNOMETRA L.

Cynometra retusa Britt. & Rose. *Fruta de Danto* (Honduras). Occasional in forest; ranging to Honduras. A tree 6–12 meters high; leaves on very short stalks, the 2 leaflets oblong, very oblique, obtuse to acuminate, 7–10 cm. long, glabrous; flowers small, clustered in the leaf axils or on naked branches; young pods hairy. Heartwood pale brown, merging into the lighter-colored sapwood; hard, strong, tough, fairly straight-grained, fine-textured, not durable; no known use.

DELONIX Raf. Poinciana, Flame Tree

Delonix regia (Bojer) Raf. *Flamboyán* (Yucatan). Planted for ornament; native of Madagascar. A low tree with few spreading branches and very large, deciduous, bipinnate leaves; very showy when covered with its large flame-colored blossoms.

DIALIUM L.

Dialium guianense (Aubl.) Steud. *D. divaricatum* Vahl. *Ironwood, Wild Tamarind. Paleta. Uhee-tee* (corruption of some Maya name). Frequent in forest; Guatemala to Brazil. A large or medium-sized tree with smooth bark, and frequently with large, thin buttresses; leaves pinnate, the 5–7 leaflets thin, ovate, 6–9 cm. long, with long, tapering tips, glabrous or almost so; flowers small, yellow, in large panicles; stamens only 2; fruit globose or ovoid, smooth, not opening, 1-seeded, 2 cm. long. The fruits are a favorite food of many wild animals. Wood dark reddish or blackish brown, very

hard, heavy, tough and strong, and highly resistant to decay and insects; esteemed locally for heavy and durable construction, repairs to logging-cart wheels, etc. (For description of wood see *T. of T. A.*, pp. 239–240.)

HAEMATOXYLUM L.

Haematoxylum campechianum L. *Logwood. Tinta. Ek* (Maya). Abundant in low forest and thickets in the northern plains; Campeche to Honduras; West Indies. A small tree with compressed and fluted trunk, the bark smooth, light gray, armed with stout spines; leaves glabrous, pinnate, the few leaflets broadly wedge-shaped, 1–3 cm. long, with numerous parallel nerves; flowers yellow, 5–6 mm. long, in racemes; pods flat, thin, 2–5 cm. long, 8–12 mm. wide. The wood, the well-known source of Logwood dye, is still an article of export, though no longer of its former importance. (See p. 28. For description of the wood see *T. of T. A.*, pp. 244–246.)

HYMENAEA L.

Hymenaea Courbaril L. *Locust. Guapinol.* Occasional in forest; widely distributed in tropical America. A small or medium-sized tree with smooth bark; leaflets 2, oblong to oblong-ovate, 4–9 cm. long, acute or acuminate, asymmetric, glabrous; flowers whitish, large, in small or large, terminal panicles; pod woody and hard, not opening, oblong, dark brown, compressed, 5–10 cm. long, few-seeded. A pale yellow or reddish gum, known in trade as South American copal, exudes from the trunk and sometimes becomes buried in the soil, to be dug up later as "fossil" gum. It is employed in the manufacture of varnish, as well as for incense. The sweet, mealy pulp surrounding the large seeds is edible. Wood variable in color from orange-brown to reddish or purplish; hard, heavy, tough, and strong, rather coarse-textured, not very difficult to work; used locally for heavy and durable construction and wheelwright work. (For description of the wood see *T. of T. A.*, pp. 232–233.)

SCHIZOLOBIUM Vog.

Schizolobium parahybum (Vell.) Blake. *Quam. Zorra. Tambor* (Honduras). Common in wet forest from Hillbank south; ranging to Brazil. A tall tree, 15 meters high or more, with a tall, clean trunk 25 cm. or more in diameter, small crown, and often large buttresses; leaves large, frequently a meter long, the very numerous leaflets oblong, 2 cm. long, rounded at the tip; flowers large, bright

yellow, showy, in long panicled racemes; pods flat and thin, broadly spatulate. The petioles of the leaves are exceedingly viscid. Young trees often are unbranched or with only a few stout branches, these terminated by a cluster of huge leaves that suggest the fronds of a tree fern. The tree is an exceptionally conspicuous one when in flower, because of the great abundance of bright-colored blossoms. It often grows in huamil or cut-over land. Wood nearly white, with streaks of brown; soft and springy to moderately hard; rather coarse-textured, has a soft feel, saws woolly, is not durable; not utilized, but appears suitable for paper pulp. (See *Trop. Woods* 2: 2–5.)

SWARTZIA Schreb.

Swartzia simplex (Swartz) Spreng. Temash River and elsewhere; southern Mexico to Panama and the West Indies. A slender tree 9 meters high, the trunk 12 cm. in diameter; leaves pinnate, the rachis very narrowly winged, the leaflets 5–7, ovate, 4–10 cm. long, acuminate, glabrous or nearly so; inflorescences few-flowered, the flowers on long, slender pedicels, the buds globose; petal only one (the standard), yellow; pods terete, 1–3-seeded, long-beaked. The woods of the genus *Swartzia* are highly colored, very hard and heavy, with alternating bands of wood fibers and parenchyma, and with distinct ripple marks; suitable for heavy and durable construction.

TAMARINDUS L.

Tamarindus indica L. *Tamarind. Tamarindo.* Planted and probably escaping; native of the Old World tropics. A large or medium-sized tree, unarmed; leaves pinnate, the numerous leaflets oblong, 1–2 cm. long; flowers yellow, striped with red, in racemes; pods brown, indehiscent. The 4–7 seeds are surrounded by a somewhat acid, juicy pulp that is often employed for preparing cooling beverages.

ZOLLERNIA Mart.

Zollernia Tango Standl. *Tango.* Toledo District, *Balderamos* (Yale 14501); Honduras. A tall tree; leaves simple, short-petioled, glabrous, oblong or oblong-elliptic, 10–12 cm. long or shorter, acuminate, remotely toothed; flowers in terminal racemes; fruit subglobose, 2 cm. in diameter, 1-seeded. Structure of the wood similar to that of *Swartzia;* heartwood chocolate-brown, sapwood thick, yellowish, exceedingly hard and heavy, rather fine-textured, finishes very smoothly, and is very strong; suitable for tool handles.

III. PAPILIONATAE

ABRUS L.

Abrus precatorius L. *John Crow Bead. Yocoak* (Yucatan, Maya). Stann Creek; Belize. A small, slender, somewhat woody vine; leaves even-pinnate; seeds scarlet and black. The handsome seeds often are employed for making necklaces, bracelets, and other ornamental articles.

AESCHYNOMENE L.

Aeschynomene americana L. One of the most common weeds of Central America.

Aeschynomene brasiliana (Poir.) DC. Reported as collected by Peck, No. 285.

Aeschynomene Deamii Robinson & Bartlett. Northern River, *Gentle* 1365. A rare species, occurring also in Guatemala.

Aeschynomene hystrix Poir.

Aeschynomene laevis Mart. & Gal. Río Privación, El Cayo District, *Bartlett* 11784.

Aeschynomene sensitiva Swartz.

Aeschynomene tenerrima Robinson, Proc. Amer. Acad. 49: 503. 1913. Type collected in swamp near Icaco Lagoon, *Peck* 900.

ANDIRA Lam.

Andira inermis HBK. *Cabbagebark, Cornwood, Black Blossom Berry. Almendro, Carbón, Chaperno. Iximche* (Maya). Frequent in forest; widely distributed in tropical America. A large tree with dense, dark green crown; leaves pinnate, the leaflets opposite, 7–13, oblong, acuminate, glabrous; flowers purple, 1–1.5 cm. long, in large, dense panicles; fruit globose, hard, 2–4 cm. in diameter or larger, containing a single large seed. The bark has a nauseous odor, and is used sometimes as a vermifuge, purgative, and narcotic, but in large doses it is reported to be a dangerous poison. Wood reddish or brown, with fine, light-colored striping; very hard, heavy, strong, and durable; easily sawn, fairly easy to work; used locally for heavy construction and wheelwright work. (For description of the wood see *T. of T. A.*, p. 300.)

ARACHIS L.

Arachis hypogaea L. *Peanut. Maní.* Cultivated; native of Brazil.

ATELEIA Moc. & Sessé

Ateleia cubensis Griseb. *Tuxche* (Maya). Honey Camp, *Lundell* 580; All Pines, *Schipp* 705; Cuba and Bahamas. A tree 9 meters high, the trunk 20 cm. in diameter; leaves pinnate, the leaflets numerous, elliptic, obtuse, leathery, pubescent; flowers very small, cream-colored, slightly fragrant, in long axillary racemes; petal only 1; fruit small, compressed, samara-like, 1-seeded.

BARBIERIA DC.

Barbieria pinnata (Pers.) Baill. Río Grande, open places in forest, *Schipp* 1108; southern Mexico to South America. A slender shrub, according to Schipp 6 meters high, the branches hirsute; leaves odd-pinnate, with numerous large oblong leaflets; flowers red, 5.5 cm. long; pods linear, hirsute.

BENTHAMANTHA Alef.

Benthamantha Greenmanii (Millsp.) Britten & Baker f. Maskall, *Gentle* 1319; known also from Yucatan and Campeche.

CAJANUS DC. Pigeon Pea

Cajanus bicolor DC. *Chicharo* (Honduras). Cultivated for its edible seeds, and also naturalized. A tall, coarse herb, or often shrubby; native of tropical Asia.

CALOPOGONIUM Desv.

Calopogonium brachycarpum Benth. Carib Reserve, *Schipp*.

Calopogonium coeruleum Benth. A large or small vine, often slightly woody.

CANAVALIA HBK.

Canavalia maritima (Aubl.) Thou. *Frijol del Mar* (Honduras). Common on sea beaches.

Canavalia mexicana Piper. *Haba* (Yucatan).

Canavalia villosa Benth.

CENTROSEMA DC.

Centrosema angustifolium (HBK.) Benth.

Centrosema Plumierii Turp. Corozal District, *Gentle* 1071.

Centrosema sagittatum (Humb. & Bonpl.) Brandeg. Belize River, *Lundell* 4365. Easily recognized by the leaves, which consist of a single sagittate leaflet.

Centrosema virginianum (L.) Benth.

CLITORIA L.

Clitoria Ternatea L. Corozal District. Cultivated and escaping; native of the Old World tropics.

Clitoria guianensis (Aubl.) Benth.

CROTALARIA L.

Crotalaria incana L. *Sacpet* (Yucatan, Maya).

Crotalaria maypurensis HBK.

Crotalaria pumila Ortega. *Tronadora* (Yucatan).

Crotalaria retusa L. Reported to be used medicinally.

Crotalaria sagittalis L. Honey Camp.

Crotalaria verrucosa L. *Virgin Flower*. Belize District, *Gentle* 38.

DALBERGIA L. f.

Shrubs or trees; leaves with 1 to numerous leaflets, the leaflets alternate; flowers small, in axillary racemes or panicles; fruit compressed, either short or elongate, with thin valves. All trees of this genus that attain sufficient size yield timber of good quality for cabinet work, furniture, and turnery; the best known are the true Rosewoods and Cocobolo.

Leaves with only 1 leaflet, appearing simple.

Leaflets glabrous beneath; fruit 1–3-seeded..... *D. Brownei.*

Leaflets with fine appressed hairs beneath; pods 1-seeded. *D. Ecastophyllum.*

Leaves with few or numerous leaflets.

Leaflets small, 2.5 cm. long or less, rounded at the apex.. *D. glabra.*

Leaflets large, usually more than 5 cm. long.

Leaflets glabrous beneath.

Leaflets elliptic, narrowly very long-acuminate.. *D. monetaria.*

Leaflets oblong or oblong-ovate, blunt-tipped... *D. laevigata.*

Leaflets hairy beneath.

Leaflets softly pubescent on both surfaces with more or less spreading hairs..... *D. cubilquitzensis.*

Leaflets glabrous above, closely appressed-hairy beneath. *D. Stevensonii.*

Dalbergia Brownei (Jacq.) Urban. *Red Fowl.* Belize-Sibun Road, *Gentle* 57, 18; widely distributed in tropical America. A shrub or small tree, often with recurved or somewhat clambering branches,

almost glabrous; leaflet ovate or oval, retuse to acutish, 3–7 cm. long; flowers small, white, densely clustered.

Dalbergia cubilquitzensis (Donn. Smith) Pittier. *Rosewood. Granadillo* (Guatemala, Honduras). Occasional in forest; ranging to Honduras. A tree 9–15 meters high or larger; leaflets about 13, oblong to ovate, thin; flowers creamy white, in dense cymes in the leaf axils. Wood orange-colored, with purple streaks, darkening to purplish brown; not scented; rather hard and heavy, very tough, texture medium-fine, grain more or less interlocked; a high-grade cabinet wood of little use in British Honduras, but highly appreciated in the Republic of Honduras where the timber is more plentiful.

Dalbergia Ecastophyllum (L.) Taub. In coastal thickets and tidal swamps; widely distributed in tropical America. A shrub or small tree, the branches sometimes long and trailing; leaflet oblong-ovate, 7–13 cm. long, acute or short-acuminate, with fine appressed hairs on the lower surface; flowers white, 8 mm. long, in short, dense racemes; pods 1-seeded.

Dalbergia glabra (Mill.) Standl. *Cibix, Muc* (Yucatan, Maya). Honey Camp, New Town, and elsewhere; southern Mexico. An erect or climbing shrub; leaflets few, oval or obovate, more or less appressed-hairy or glabrous; flowers white, fragrant, in short axillary panicles; fruit small, 1-seeded.

Dalbergia laevigata Standl. Trop. Woods 12: 5. 1927. Type from lower Belize River, *Record;* Stann Creek Valley, broken pine ridge, occasional, *Schipp* 462. A tree 15 meters high, the trunk 45 cm. in diameter; leaflets 9–11, lance-oblong, 4–7.5 cm. long; panicles equaling or longer than the leaves; fruit thin, glabrous, 1–2-seeded, 1.5–2 cm. wide.

Dalbergia monetaria L. f. Occasional in mangrove swamps; widely distributed in tropical America. A shrub or small tree, sometimes scandent, glabrous; leaflets 3–5; flowers small, white, in short, dense racemes; pods thin, glabrous.

Dalbergia Stevensonii Standl. Trop. Woods 12: 4. 1927. *Rosewood.* Type collected along San Antonio Road near Westmoreland, Punta Gorda, *N. S. Stevenson* (Yale 10696); other collections have been made in the same general region. A large or medium-sized tree, 15–30 meters high; leaflets 5–7, 3.5–5.5 cm. long, obtuse to rounded at the apex; panicles shorter than the leaves, lax and much branched; pods 1-seeded, 4–4.5 cm. long, 12–15 mm. wide. A well-known commercial timber, exported to the United States for making

bars for xylophones and marimbas. (See p. 32; also *T. of T. A.*, pp. 285–286.)

DESMODIUM Desv.

Desmodium adscendens (Swartz) DC.

Desmodium axillare (Swartz) DC.

Desmodium barbatum (L.) Benth. & Oerst.

Desmodium frutescens (Jacq.) Schindl. *Mozote* (Honduras).

Desmodium intortum (Mill.) Urban. Guatemalan boundary, *Schipp.*

Desmodium purpureum (Mill.) Fawc. & Rendle. *Kintah* (Yucatan, Maya).

Desmodium Scorpiurus (Swartz) Desv.

Desmodium triflorum (L.) DC.

DIOCLEA HBK.

Dioclea guianensis Benth. This and the following are large vines that may be either wholly herbaceous or somewhat woody.

Dioclea reflexa Benth. *Horse-eye Seed.* All Pines; Belize-Sibun Road.

DIPHYSA Jacq.

Diphysa carthaginensis Jacq. *Wild Ruda. Susuk, Tsutsuc* (Maya). Frequent in thickets or open forest; Mexico to northern South America. A small or medium-sized tree, the trunk 15–25 cm. in diameter; leaves pinnate, the small leaflets oblong to oval or obovate, rounded at the apex, pale beneath, glabrous or nearly so; flowers rather large, bright yellow, in short racemes; pods narrow, inflated and bladder-like. Wood greenish yellow to olive-brown, very hard, heavy, strong, of medium-fine texture, and irregular grain; highly durable; suitable for same purposes as Black Locust (*Robinia Pseudacacia*).

DOLICHOS L. Hyacinth Bean

Dolichos Lablab L. Belize River, *Lundell,* doubtless in cultivation. An ornamental plant with white or purple flowers and large, edible seeds.

DREPANOCARPUS Meyer

Drepanocarpus lunatus (L. f.) Meyer. Jacinto Creek, *Schipp* S577; southern Mexico to South America, and in western Africa.

A large, woody vine, as much as 15 meters long, with a stem 6 cm. in diameter, armed with short spines; leaves odd-pinnate, the numerous leaflets oblong or obovate, 1.5–3 cm. long, finely nerved, glabrous; flowers small, panicled, pink or purple; pods small, flat, curved almost into a circle.

ERIOSEMA Desv.

Eriosema diffusum (HBK.) Don. Frequent in pine lands.

Eriosema pinetorum Standl. Field Mus. Bot. 8: 315. 1931. Type from open forest, All Pines, *Schipp* 584; El Cayo District, *Bartlett* 11605; also in Petén.

Eriosema pulchellum (HBK.) Don. All Pines, *Schipp*.

ERYTHRINA L.

Erythrina rubrinervia HBK. *Coama Wood, Tiger Wood. Pito, Colorín. Chacmolche, Sumpankle* (Maya). Frequent in forest or thickets; extending to South America. A prickly shrub or tree 3–6 meters high with few thick branches and pale bark; leaflets 3, large, thin, long-acuminate, pale and silky-hairy beneath; flowers red, the standard petal long and narrow, scimitar-shaped, the other petals small; pods long and drooping, several-seeded, deeply constricted between the seeds; seeds large, bean-like, bright scarlet. The wood is light, soft, very coarse-textured, and perishable, not utilized.

It may be that *E. hondurensis* Standl. also occurs in British Honduras, but more flowering specimens are needed to decide the matter.

GALACTIA P. Br.

Galactia belizensis Standl. Field Mus. Bot. 11: 133. 1932. Type from river bluffs, El Cayo, *Bartlett* 11449.

Galactia nitida Standl. Carnegie Inst. Wash. Publ. 461: 62. 1935. Type from Camp 32, Guatemalan boundary, *Schipp* S680.

Galactia striata (Jacq.) Urban. Honey Camp; Corozal District.

GLIRICIDIA HBK.

Gliricidia sepium (Jacq.) Steud. *Madre de Cacao. Zacyab* (Yucatan, Maya). Common in thickets and open forest; widely distributed in tropical America. A tree 5–9 meters high; leaves pinnate, the 7–15 leaflets elliptic to oblong, 4–6 cm. long, acute or obtuse, usually blotched with purple beneath; flowers in racemes,

pink or white, 2 cm. long; pods linear, flat, 10–15 cm. long, 1.5 cm. wide, glabrous. The tree is a showy and handsome one when in flower, strongly suggestive of the Black Locust (*Robinia Pseudacacia*) of the United States, to which it is closely related. The name *Madre de Cacao* is derived from the fact that in preconquest times, as well as later, the tree was used commonly to shade cacao plantations, since cacao trees thrived particularly well when associated with it. This was because of the nitrogen-fixing bacteria that inhabit the roots of the tree. At the present time the tree is one of those most often planted for living fence posts. Wood light to dark olive-brown, becoming russet upon exposure; very hard, heavy, and strong, takes a high polish, and is highly durable; is suitable for the same purposes as Black Locust.

INDIGOFERA L.

Indigofera mucronata Spreng. *Añilillo* (Yucatan).

Indigofera suffruticosa Mill. *Indigo. Añil* (Central America generally). *Choh* (Yucatan, Maya). A coarse herb, often becoming somewhat shrubby. Formerly this plant was cultivated extensively in Central America as a source of indigo.

Indigofera tinctoria L. Belize River, introduced.

LENNEA Klotzsch

Lennea robinioides Klotzsch. Roaring Creek, *Lundell* 390; Guatemala, southern Mexico. A slender shrub 2–3 meters high; leaflets usually 9–11, thin, glabrous, oval or broadly ovate, rounded and emarginate at the apex; flowers red or purplish, small, in very lax racemes in the leaf axils; fruit a flat, glabrous, linear pod.

LONCHOCARPUS HBK.

Trees or large shrubs; leaves pinnate, the few or numerous leaflets opposite; flowers large and showy, pink or purple, in panicled racemes; fruit flat, usually thin, oblong or linear, indehiscent. The woods of *Lonchocarpus* are rather highly colored, hard, heavy, tough, and strong; have a laminated structure suggesting Dogwood (*Piscidia*); used for heavy and durable construction.

Leaflets broadly rounded at the apex, the venation beneath conspicuously elevated and reticulate.....*L. rugosus.*

Leaflets obtuse to acuminate, not reticulate-veined beneath.

Leaflets small, less than 1.5 cm. wide, with strongly revolute margins, pale beneath and minutely strigose.....*L. Castilloi.*

Leaflets more than 1.5 cm. wide, not revolute.

Leaflets glabrous except sometimes beneath along the costa, green beneath.....*L. hondurensis.*

Leaflets sericeous or puberulent beneath, at least when young, usually paler beneath.

Calyx 6–7 mm. long; leaflets small, 15–18 mm. wide. *L. amarus.*

Calyx 3–5 mm. long; leaflets mostly more than 2.5 cm. wide.

Calyx about 3 mm. long.....*L. latifolius.*

Calyx 4.5–5 mm. long.....*L. guatemalensis.*

Lonchocarpus amarus Standl. Carnegie Inst. Wash. Publ. 461: 63. 1935. *Bitterwood.* Type from Río Grande, *Schipp* 1120. A tree of 24 meters, the trunk 60 cm. in diameter; leaflets 11–13, oblong or elliptic-oblong, rounded or very obtuse at the apex, glabrous above, sericeous beneath; flowers purple.

Lonchocarpus Castilloi Standl. Trop. Woods 32: 15. 1932. *Cabbage-bark, Black Cabbage-bark. Machich* (Maya). Type from Freshwater Creek Reserve, high swamp forest, fairly common, *Castillo* 30; collected at several other stations; Petén. A tree 9–36 meters high, the trunk 15–120 cm. in diameter; leaflets numerous, small and narrow, obtuse, with inconspicuous venation; pods thin, 1–2-seeded, 2.5–3 cm. wide.

Lonchocarpus guatemalensis Benth. *Swamp Dogwood. Cincho.* Apparently frequent in forest; southern Mexico to Costa Rica. A large tree, often leafless at flowering time, the trunk 60 cm. in diameter; leaflets about 7, large, oblanceolate-oblong to obovate, acute or acuminate, tapering to the base, often glabrate in age; flowers rather large, white and purple. From the bark of related species of the genus, the native people of Yucatan formerly, at least, prepared an intoxicating beverage. This drink, called Balche, was an important adjunct of some of their religious ceremonies. Probably all the species of the genus were employed in the same manner in this general region.

Lonchocarpus hondurensis Benth. *Swamp Dogwood, Waterside Turtlebone. Yax habin* (Yucatan, Maya). Frequent in forest; southern Mexico to Honduras. A large tree; leaflets 5–9, ovate-oblong, acute or acuminate, 4–10 cm. long; flowers red-purple, 12 mm. long, often in long and very dense racemes.

Lonchocarpus latifolius (Willd.) HBK. *Swamp Dogwood. Cincho* (Honduras). Frequent in forest, especially along streams or

in swamps; southward to Panama. A tree 9–15 meters high with trunk diameter of 12–22 cm.; leaflets 5–9, oblong or ovate-oblong, sometimes 20 cm. long, acuminate, pale and usually finely silky beneath; flowers 1 cm. long, reddish purple; pods thin, lanceolate, narrowed to each end, 1–5-seeded, 2–2.5 cm. wide. Schipp states that the tree is infested by a certain species of ant.

Lonchocarpus rugosus Benth. *Black Cabbage-bark. Canacin* (Maya). Apparently frequent, especially in open forest; Mexico and Guatemala. A shrub or tree, the trunk sometimes 12 cm. in diameter; leaflets about 13, oblong-elliptic, pubescent or glabrate, leathery; flowers dull red; pods thin, brown-sericeous.

MACHAERIUM Pers.

Shrubs or trees, often large, woody vines, often armed with spines or prickles; leaflets small or large, few or numerous, alternate; flowers small, usually purple, in racemes, the racemes often panicled; fruit samara-like, compressed, the basal portion 1-seeded, the body extended into a large, broad, terminal wing much longer than the body itself.

Leaflets acute or acuminate, mostly 1.5–4 cm. wide.

Leaflets densely and minutely sericeous beneath. . . . *M. rosescens.*

Leaflets glabrous beneath or nearly so.

Branches usually hispid; leaflets mostly 7–15 cm. long. *M. marginatum.*

Branches not hispid; leaflets mostly 3–6 cm. long. *M. Seemannii.*

Leaflets obtuse or rounded at the apex, less than 1.5 cm. wide.

Leaflets mostly emarginate at apex, more than 1 cm. wide, glabrous. *M. habroneurum.*

Leaflets not emarginate, 8 mm. wide or less.

Leaflets small, about 3 mm. wide and 8 mm. long. *M. Merrillii.*

Leaflets larger, 6–8 mm. wide, 3–4 cm. long. . . . . *M. setulosum.*

Machaerium habroneurum Standl. Carnegie Inst. Wash. Publ. 461: 63. 1935. Type from Camp 32, Guatemalan boundary, *Schipp* S676. A climbing shrub 12 meters long, the trunk 5 cm. in diameter, armed with very short, recurved spines; leaflets 7–9, oblong or cuneate-oblong, with very numerous fine lateral nerves; flowers purple.

Machaerium marginatum Standl. Río Grande, *Schipp;* southward to Panama. A large vine, 15–25 meters long, the trunk

as much as 7.5 cm. in diameter; leaflets large, leathery, lustrous; flowers pink, in large panicles.

Machaerium Merrillii Standl. Field Mus. Bot. 8: 15. 1930. Type from Stann Creek Railway, Twelve Mile, in jungle, *Schipp* 113; Malfredi Lagoon, *Schipp* S555; Petén. A woody vine 9–15 meters long, the stems 5–10 cm. in diameter, armed with stout spines; leaflets very numerous, oblong, glabrate; flowers pink or dark rose, in large panicles, the branches of the panicle hispid.

Machaerium rosescens Standl. Carnegie Inst. Wash. Publ. 461: 64. 1935. In forest, Big Rock, Toledo, *Schipp* 1091. A climbing shrub 9 meters long, the stem 5 cm. in diameter; stipules persistent and indurate but scarcely spine-like; leaflets 5–7, oblong or ovate-oblong, 5–7 cm. long; flowers small, white flushed with pink, in large panicles.

Machaerium Seemannii Benth. Jacinto Creek, *Schipp* 1194; extending to Panama. A woody vine as much as 25 meters long, with a trunk 7 cm. in diameter; leaflets ovate, acuminate, leathery, very lustrous; flowers purple, in short racemes.

Machaerium setulosum Pittier. Mullins River Road, swampy forest, *Schipp* 931; Guatemala and southern Mexico. A climbing shrub 12 meters long, the stems 10 cm. in diameter; leaflets very numerous, densely silky when young, almost glabrous in age; racemes forming large panicles, the flowers purple, small.

MUCUNA Adans.

The species of this genus are vines, usually herbaceous but often with more or less woody stems.

Mucuna Andreana Micheli.

Mucuna pruriens (L.) DC. *Cowitch. Picapica. Chiican* (Yucatan, Maya). Pods covered with stiff hairs that penetrate the skin readily, causing intense irritation. These hairs, mixed with molasses, formerly supplied a favorite remedy for expelling intestinal parasites from the human body.

Mucuna rostrata Benth. Río Grande, *Schipp* S622.

Mucuna Sloanei Fawc. & Rendl. El Cayo; Stann Creek.

MYROXYLON L.

Myroxylon balsamum (L.) Harms, var. **Pereirae** (Royle) Harms. *Balsam. Bálsamo. Nabá* (Yucatan, Maya). Occasional in forest; this variety in Central America, the other forms of the species

widely distributed in tropical America. A tall tree with small crown, the bark smooth and pale; leaves pinnate, the 7–11 leaflets with large, translucent oil glands; flowers whitish, racemose; fruit samara-like, 7 cm. long, 2–3 cm. wide, the apex thick and 1-seeded, the basal portion long and broadly winged. By tapping the tree there is obtained the Balsam of Peru, a fragrant aromatic liquid variously employed in industry, and an official drug of the United States Pharmacopoeia. Almost all of this product comes from the so-called Balsam Coast of the Republic of Salvador. The wood, though of excellent quality, is of no commercial importance in British Honduras because of its scarcity. (For description see *T. of T. A.*, pp. 265–267.)

ORMOSIA Jacks.

Large trees; leaves pinnate, the few leaflets large, oblong or obovate, leathery, obtuse or acute; flowers rather large, panicled; pods small, oblong, few-seeded, the large bean-like seeds scarlet or red and black.

Leaflets velvety-pubescent beneath.....*O. coarctata.*

Leaflets glabrous or nearly so.....*O. toledoana.*

Ormosia coarctata Jacks. Mullins River Road; Temash River; northern South America. A tree 12–18 meters high, the trunk 20–30 cm. in diameter; flowers dark purple; seeds red and black. Wood hard, close-grained, yellow when cut.

Ormosia toledoana Standl. Carnegie Inst. Wash. Publ. 461: 64. 1935. Type from Forest Home, Toledo, *Schipp* 1052. A tree of 12 meters, the trunk 60 cm. in diameter; leaflets 7, oblong, 6–12 cm. long; calyx grayish-sericeous; seeds said to be red.

PACHYRHIZUS Rich.

Pachyrhizus erosus (L.) Urban. *Jícama. Chicam* (Maya). Cultivated for its tubers, which somewhat suggest turnips in form and have a watery flesh of agreeable flavor. Probably a native of Mexico.

Pachyrhizus palmatilobus (Moc. & Sessé) Benth. & Hook. All Pines, *Schipp.* A herbaceous vine.

PHASEOLUS L. Bean

Phaseolus adenanthus Meyer.

Phaseolus atropurpureus DC. Belize District.

Phaseolus elegans Piper. *Kantzin* (Yucatan, Maya). Corozal District.

Phaseolus gracilis Poepp.

Phaseolus lathyroides L.

Phaseolus lunatus L. The wild form from which the cultivated lima bean probably originated.

Phaseolus peduncularis HBK. Stann Creek Valley, *Schipp* 864.

Phaseolus vulgaris L. *Bean. Frijol. Bul, Buul* (Maya). Cultivated extensively. A native of America, but perhaps not of North America.

PISCIDIA L.

Piscidia piscipula (L.) Sarg. *Dogwood, May Bush. Habim* (Maya). Common in coastal thickets; Mexico, Central America, West Indies, Florida, Colombia. A large shrub or a tree, becoming 15 meters high, with a trunk 75 cm. in diameter; leaves pinnate, the large leaflets oblong to oval, acute to rounded at the apex, minutely appressed-pubescent beneath; flowers large, pink; pods not opening, with 4 very broad, irregular, thin, longitudinal wings. The bark and foliage of the tree are or have been employed widely for poisoning fish. The plant has been much used in local medicine because of its marked narcotic properties. The form occurring in British Honduras is *Piscidia communis* (Blake) Harms, which appears not to be distinguishable from the typical Jamaican form by any constant or important character. Wood yellowish brown, with prominent parenchyma markings; hard and heavy, very strong and tough, highly durable, of medium texture and interlocked grain; used for heavy and durable construction and for wheelwright work. (For detailed description of wood see *T. of T. A.*, pp. 298–300.)

PLATYMISCIUM Vog.

Platymiscium yucatanum Standl. *Granadillo* (Yucatan). *Zubinche* (Yucatan, Maya). Big Creek, *Schipp* 226; Yucatan. A tree 12 meters high, the trunk 20 cm. in diameter; leaves deciduous, pinnate, the leaflets long-petiolulate, lance-oblong to ovate, obtuse-acuminate, glabrous; flowers small, yellow, the racemes clustered on old wood.

PTEROCARPUS L.

Trees; leaves pinnate, with few large leaflets; flowers large, yellow, in racemes or panicles; fruit short and broad, compressed,

1–2-seeded, often broadly winged. Although some Old World species of *Pterocarpus* are the source of excellent cabinet timbers, the American species are practically valueless, the wood being without attractive color or figure. (For description of the wood see *T. of T. A.*, pp. 293–296.)

Calyx glabrous; wings of the fruit narrow and thick, often obsolete. *P. officinalis.*

Calyx densely pubescent; wing of the fruit broad and thin. *P. Hayesii.*

Pterocarpus Hayesii Hemsl. *P. reticulatus* Standl. Trop. Woods 16: 38. 1928. Occasional in forest; type of *P. reticulatus* from Boca, *C. S. Brown* 15 (Yale 12306); southward to Panama. A tree 18 meters high with trunk diameter of 30 cm.; leaflets oblong, acuminate, large, reticulate-veined, rather thin, more or less pubescent; flowers orange-yellow, in dense racemes; fruit orbicular or nearly so, 5 cm. wide or larger.

Pterocarpus officinalis Jacq. *P. belizensis* Standl. Trop. Woods 7: 6. 1926. *Kaway, Swamp Kaway. Sangre* (Honduras). Type of *P. belizensis* from Middlesex, *Record* 12 (Yale 8780); frequent in low forest; widely distributed in tropical America. A tall tree with slender trunk and thin buttresses, the bark smooth; sap blood-red; leaflets 7–9, oblong to ovate, 10–18 cm. long, glabrous or nearly so; fruit 5–10 cm. wide. The fruits are produced in great abundance, and when they fall often cover the water of swamps in which the trees grow.

RHYNCHOSIA Lour.

Rhynchosia discolor Mart. & Gal. Camp 34, Guatemalan boundary, *Schipp.*

Rhynchosia longeracemosa Mart. & Gal. Corozal District, *Gentle* 649.

Rhynchosia minima (L.) DC.

Rhynchosia pyramidalis (Lam.) Urban. Noteworthy for its handsome, scarlet and black, bean-like seeds, which sometimes are used for making bracelets and necklaces.

SESBANIA Adans.

Sesbania Emerus (Aubl.) Urban. Northern River, *Gentle* 1371.

Sesbania sericea (Willd.) Link. Belize; Northern River. The species is unknown elsewhere in Central America.

SOPHORA L.

Sophora tomentosa L. All Pines, in broken coral behind mangroves, *Schipp;* widely distributed on tropical seashores of both hemispheres. A shrub 3 meters high, with dense soft pale pubescence on all parts; leaves pinnate, the opposite leaflets oval or rounded, broadly rounded at the apex; flowers yellow, in long racemes; pods long and slender, deeply constricted between the few large brown seeds.

STYLOSANTHES Swartz

Stylosanthes guyanensis (Aubl.) Swartz.

Stylosanthes humilis HBK. El Cayo District, *Bartlett* 11836.

Stylosanthes viscosa Swartz. Butcher Burn, Sibun River, *Bartlett* 11405.

SWEETIA Spreng.

Sweetia panamensis Benth. *Billy Webb. Chichipate.* Occasional in forest; southern Mexico to Panama. A medium-sized tree; leaves pinnate, the leaflets alternate, ovate or oblong-elliptic, lustrous above, pale beneath, obtuse; flowers small, whitish, in axillary panicles; fruit thin, 1–2-seeded, 2 cm. wide, acute at each end, glabrous, slender-stalked.

TEPHROSIA Pers.

Tephrosia cathartica (Sessé & Moc.) Urban. Seine Bight, *Schipp* 670.

Tephrosia littoralis (L.) Pers.

Tephrosia toxicaria (Swartz) Pers.

TIPUANA Benth.

Tipuana Lundellii Standl. El Cayo, *Chanek* 163; Petén. A tall tree; leaves pinnate, the 11–15 leaflets elliptic, 2.5–5 cm. long, truncate or excised at the apex, sericeous beneath at first but soon glabrate; fruit samara-like, 10–13 cm. long, the wing 2.5–3 cm. broad. The other species of the genus are South American.

VIGNA Savi

Vigna repens (L.) Kuntze. *Frijol de Playa* (Honduras).

Vigna vexillata (L.) A. Rich.

ZORNIA Gmel.

Zornia diphylla (L.) Pers.

OXALIDACEAE. Wood Sorrel Family

BIOPHYTUM DC.

Biophytum dendroides (HBK.) DC. Roaring Creek, *Lundell.*

OXALIS L.

Oxalis Neaei DC. All Pines.

Oxalis yucatanensis (Rose) Standl.

ERYTHROXYLACEAE. Coca Family

ERYTHROXYLON L.

Glabrous shrubs or small trees; leaves alternate, entire, thin, stipulate, short-petioled; flowers small, whitish or yellowish, solitary or clustered in the leaf axils; fruit a small drupe.

Leaves rounded or very obtuse at the apex; stipules small and inconspicuous, not striate.....*E. areolatum.*

Leaves acute or acuminate; stipules large and conspicuous, striate.....*E. tabascense.*

Erythroxylon areolatum L. *Redwood, Ridge Redwood, Swamp Redwood.* Frequent in thickets or open forest; West Indies. A glabrous shrub or small tree, sometimes 5 meters high; leaves alternate, obovate-oblong to broadly obovate, 5–10 cm. long, rounded at the apex, entire, with small stipules; flowers small, clustered in the leaf axils, pedicellate, cream-colored, with 5 petals; stamens 10; fruit a red drupe 6–9 mm. long. The drug cocaine is obtained from *E. Coca* Lam. of the South American Andes. It is not known whether the Central American members of the genus have similar properties. Some of the British Honduras material has been referred to *E. obovatum* Macfad. and to other species, but it seems to belong to a single species, not separable from *E. areolatum.* Wood reddish brown, with oily appearance; hard, heavy, fine-textured, irregularly grained, highly durable. (For further description of wood see *T. of T. A.*, pp. 310–311.)

Erythroxylon tabascense Britton. Wooded creek bank, Machaca, *Schipp* S586; Tabasco. A tree of 4.5 meters, the trunk 7 cm. in diameter; leaves oblong, about 15 cm. long; fruit red.

ZYGOPHYLLACEAE. Lignum Vitae Family

KALLSTROEMIA Scop.

Kallstroemia maxima (L.) Torr. & Gray. A prostrate herb with small yellow flowers.

RUTACEAE. Rue Family

Trees, often armed with prickles; leaves opposite or alternate, without stipules, compound, dotted with transparent oil glands; flowers small, the inferior calyx with 3–5 lobes or sepals; petals 3–5; stamens as many or twice as many as the petals; fruit of 1–5 or more numerous free or united carpels, dry or fleshy. The best-known commercial timbers of the family are the true Satinwoods of the West Indies and Ceylon.

Fruit dry.

Leaves pinnate; fruit of 1–5 follicles.....*Zanthoxylum.*

Leaves digitately compound; fruit a hard capsule..*Esenbeckia.*

Fruit fleshy.

Leaves digitately compound, with usually 5 leaflets..*Casimiroa.*

Leaves pinnate or with a single leaflet.

Fruit a small drupe; native trees.....*Amyris.*

Fruit a large berry; introduced trees.....*Citrus.*

AMYRIS L.

Shrubs or trees; leaves opposite or alternate, the leaflets 3–5; flowers small, greenish, in terminal or lateral panicles; sepals and petals 4–5; fruit a black or reddish drupe. The yellowish wood is oily, fine-textured, and durable. (For description of the wood see *T. of T. A.*, pp. 327–328.)

Leaflets almost sessile, 1.5–3 cm. long.....*A. rhomboidea.*

Leaflets on slender, elongate petiolules, usually more than 3 cm. long.

Leaves opposite.....*A. elemifera.*

Leaves alternate.....*A. sylvatica.*

Amyris elemifera L. *Waika Pine.* Occasional; Mexico, Central America, West Indies. A shrub or small tree; leaflets 3–5, lanceolate to broadly ovate, acute or acuminate, crenulate, glabrous; fruit 5–8 mm. long.

Amyris rhomboidea Standl. Carnegie Inst. Wash. Publ. 461: 65. 1935. Type from Jacinto Hills, in forest, *Schipp* 1227. A tree of 10 meters, the trunk 20 cm. in diameter; leaflets 5 or 7, rhombic-lanceolate or rhombic-ovate, minutely puberulent or glabrate, obtusely acute or acuminate.

Amyris sylvatica Jacq. Belize District; Mexico to South America; West Indies. A tree sometimes 6 meters high; leaflets usually 3, crenate, glabrous.

CASIMIROA Llave & Lex.

Casimiroa tetrameria Millsp. *Matasano* (general in Central America). *Yuy* (Yucatan, Maya). Sometimes called White Sapote in cultivation. Corozal District and doubtless elsewhere, perhaps only in cultivation; Mexico to Costa Rica. A tree with spreading crown; leaves digitately compound, the usually 5 leaflets elliptic or obovate, entire, densely soft-pubescent beneath; fruit resembling a green apple. The rather watery, sweet, whitish flesh is edible, and of rather good flavor, but the fruit is little esteemed in Central America, chiefly because there is a prevalent belief that it is "unhealthy." As a matter of fact, there has been extracted from the seeds and leaves a glucoside having a soporific effect, hence there is probably some basis for another belief that eating the fruit induces drowsiness. Wood yellowish or nearly white; of medium density and rather fine texture, easy to work, not resistant to decay or insects; parenchyma and pores in rather wide bands producing a laminated structure.

CITRUS L.

Citrus aurantifolia (Christm.) Swingle. *Lime. Limón.* Like the following species, native of the Old World but in cultivation. The lime also has become naturalized in some localities. The wood of *Citrus* is used in the United States for manicure sticks.

Citrus Aurantium L. *Sour Orange. Naranja ácida. Zutspakal* (Maya).

Citrus grandis (L.) Osbeck. *Grapefruit. Toronja.*

Citrus medica L. *Citron. Cidra.*

Citrus sinensis Osbeck. *Sweet Orange. Naranja Dulce. Pakal* (Maya).

ESENBECKIA HBK.

Esenbeckia pentaphylla (Macfad.) Griseb. *Hokab* (Yucatan, Maya). Middlesex, in jungle, *Schipp* 248; Yucatan, Guatemala, Jamaica. A tree 12 meters high, the trunk 20 cm. in diameter; leaves long-petioled, the 3–5 leaflets oblong to obovate, entire, glabrous, rounded at the apex; flowers minute, cream-colored, in large terminal panicles; capsule angled, 4–5 cm. broad.

ZANTHOXYLUM L.

Trees or large shrubs, the trunk often armed with large hard conic prickles, the branches usually beset with small prickles; leaves

pinnate, the leaflets entire or toothed, gland-dotted; flowers small, greenish; fruit dry, composed of 1–5 small pods containing shining black seeds.

Leaflets with pubescence of small stellate hairs...*Z. microcarpum.*

Leaflets glabrous, or the pubescence of simple hairs.

Leaves odd-pinnate, with a terminal leaflet.

Leaflets entire or nearly so.....*Z. trichilioides.*

Leaflets coarsely crenate.....*Z. caribaeum.*

Leaves even-pinnate, without a terminal leaflet.

Sepals 3.....*Z. procerum.*

Sepals 4 or 5.

Leaflets mostly rounded at the base, usually coriaceous, panicles short, less than half as long as the leaves. *Z. Kellermanii.*

Leaflets acute or acutish at the base, thin; panicles large and much branched, often almost as long as the leaves. *Z. mayanum.*

Zanthoxylum caribaeum Lam. *Bastard Prickly Yellow. Sinanche* (Yucatan, Maya). Belize-Sibun Road, *Gentle* 13; widely distributed in tropical America. A very prickly shrub or small tree, glabrous or nearly so; leaflets 5–13, acute or obtuse; flowers in small panicles, the branches more or less corky-thickened.

Zanthoxylum Kellermanii P. Wilson. *Prickly Yellow. Cedro Espino* (Honduras). Hillbank; Guatemala, Honduras, Salvador. An almost glabrous tree, the thick trunk covered with corky conic prickles; leaflets 6–8, oblong, acuminate; follicles 2–3, about 6 mm. long. The crushed leaves have the odor of lemon. Wood pale yellow, moderately hard, fairly straight-grained, coarse-textured, easy to work, finishes smoothly, is not very durable, suitable for general carpentry.

Zanthoxylum mayanum Standl. Field Mus. Bot. 8: 140. 1930. *Prickly Yellow.* Type from Honey Camp, *Lundell* 672; Hillbank. Leaflets about 14, short-acuminate, glabrate; panicles as much as 25 cm. long.

Zanthoxylum microcarpum Griseb. *Alligator-toothed Prickly Yellow.* Hillbank; widely distributed in tropical America. A tree with prickly trunk; leaflets 11–20 or more, oblong, densely or sparsely stellate-pubescent beneath; follicles 1–2, subglobose, 4–5 mm. in diameter. Wood lustrous greenish yellow, moderately light and

soft, rather fine-textured, very easy to work, finishes very smoothly, is not durable; suitable for the same purposes as Yellow Poplar (*Liriodendron*).

Zanthoxylum procerum Donn. Smith. *Black Prickly Yellow. Ceibillo, Lagarto* (Guatemala). Occasional in forest; Guatemala. A large tree; leaflets long-acuminate, often very oblique at the base, crenate; panicles large and many-flowered; follicle only one, 6–7 mm. long.

Zanthoxylum trichilioides Standl. Middlesex, secondary forest, *Schipp* 304; Yucatan. A tree 9 meters high, the trunk 14 cm. in diameter, covered with large corky prickles; flowers white, in small panicles.

SIMARUBACEAE. Simaruba Family

Trees or shrubs; leaves mostly alternate, simple or pinnate; flowers perfect or of separate sexes, mostly small; sepals 3–7, distinct or united; petals 3–7, distinct, sometimes absent; stamens as many or twice as many as the petals; carpels 2–5, distinct or united; fruit usually 1-seeded.

Leaves simple, entire.....*Suriana.*

Leaves pinnate.

Rachis of the leaf broadly winged; leaflets usually 5...*Quassia.*

Rachis not winged; leaflets more than 5.

Flowers in large branched panicles; leaflets leathery, obtuse. *Simaruba.*

Flowers in long slender simple spikelike panicles; leaflets thin.

Fruit fleshy; leaflets acuminate.....*Picramnia.*

Fruit dry; leaflets rounded at the apex.....*Alvaradoa.*

ALVARADOA Liebm.

Alvaradoa amorphoides Liebm. *Palo de Hormigas* (Yucatan). *Belzinic-che* (Yucatan, Maya). Corozal District, *Gentle* 320; Mexico and Central America, West Indies, southern Florida. A small tree; leaflets 19–51, oval or oblong, 1–2.5 cm. long, finely sericeous beneath; flowers small, greenish or yellowish; fruit a lanceolate samara 1–1.5 cm. long, hairy. Wood brown, hard, rather fine-textured; pores small, in irregular tangential lines or chains; parenchyma in numerous concentric lines.

PICRAMNIA Swartz

Slender shrubs or small trees; leaves pinnate, the leaflets entire, opposite or alternate, petiolulate; flowers very small and greenish, in spikelike or branched panicles, the two sexes on separate plants; fruit a berry.

Leaflets glabrous beneath or nearly so.....*P. antidesma.*

Leaflets densely pubescent beneath at maturity.....*P. andicola.*

Picramnia andicola Tulasne. Freshwater Creek Reserve; Maskall; southern Mexico. A small tree; leaflets 7–13, oblong to ovate, acuminate; racemes simple, very long and slender.

Picramnia antidesma Swartz. Corozal District and elsewhere, in forest or thickets; southern Mexico, Central America, West Indies. A slender shrub or small tree; leaflets 7–13, oblong-ovate, entire; flowers minute, green; fruit a small red berry. The leaves and bark are exceedingly bitter, and have been employed medicinally, not only in tropical America but in Europe.

QUASSIA L. Quassia

Quassia amara L. Occasional in forest; southern Mexico to South America. A glabrous shrub or small tree; leaflets acuminate, entire; flowers bright red, 3 cm. long, in lax racemes; fruit of usually 5 black juicy drupes. When in flower the shrub is exceptionally handsome and brilliant. All parts of the plant are bitter as quinine, the flavor resulting from a principle, quasin, that formerly was believed to be of value as a febrifuge. The plant supplies the Quassia or Bitterwood of commerce, employed in the manufacture of insecticides, as a substitute for hops in brewing ale and beer, and in the preparation of proprietary medicines and of "conditioning powders" for domestic animals. Wood pale yellowish, light and soft, exceedingly bitter; not utilized. (For description of wood see *T. of T. A.*, p. 329.)

SIMARUBA Aubl.

Simaruba glauca DC. *Negrito. Xpazakil* (Yucatan, Maya). In forest or broken and high ridge; widely distributed in tropical America. A glabrous tree as much as 15 meters high, with trunk diameter of 50 cm.; leaflets 11–21, oblong, pale beneath; flowers small, greenish; fruit olive-like, black or pinkish, 1.5–2 cm. long. The bark is bitter. The fruits have a juicy white flesh that is eaten, although it is not of especially good quality. Wood yellowish white, light, firm, straight-grained, medium-textured, easy to work, not

durable, has a bitter taste; suitable for carpentry and general inside construction.

SURIANA L. Bay Cedar

Suriana maritima L. *Pantsil* (Yucatan, Maya). Occasional on seashores; Yucatan, West Indies, northern South America. A stout dense shrub a meter high, densely leafy; leaves linear-spatulate, pubescent; flowers small, yellow, clustered. Wood reddish, hard and heavy, very fine-textured, takes a high polish, is durable; not utilized. (For further description of the wood see *T. of T. A.*, p. 333.)

BURSERACEAE. Torchwood Family

Resinous trees with aromatic sap; leaves pinnate, mostly deciduous, with narrow entire long-pointed leaflets; flowers small, greenish white, panicled; petals 3–5; stamens twice as many as the petals; ovary 3–5-celled, with 2 ovules in each cell, some of the cells usually abortive, the capsular or somewhat fleshy fruit having fewer cells or often only one.

Petals imbricated in bud, distinct; fruit dry, dehiscent, 3-angled. *Bursera.*

Petals valvate; fruit drupaceous, somewhat fleshy.

Petals united..... *Tetragastris.*

Petals distinct..... *Protium.*

BURSERA Jacq.

Bursera Simaruba (L.) Sarg. *Birch, Gumbolimbo. Indio Desnudo, Palo Chino, Palo Jiote. Hukup, Chacah* (Maya). Frequent in thickets and forest; Mexico, Central America, West Indies. A small or large tree, the bark thin, smooth, greenish or brownish, peeling off in paper-like sheets; leaflets mostly 5–7, glabrous or nearly so; flowers small, greenish or yellowish, in short axillary panicles; capsule pointed, 1 cm. long. One of the most common trees of the Central American lowlands, often planted for living fence posts. When the trunk is cut, there exudes a red aromatic sap that soon hardens. This often is employed for mending broken dishes, or for coating canoes, to protect them from insects. Wood nearly colorless when fresh, but subject to sapstain; light, fairly soft, but firm and tenacious; texture medium to coarse, easy to work, finishes fairly smoothly, is perishable in contact with the ground; suitable for boxes if lumber is kiln-dried. (For detailed description of the wood see *T. of T. A.*, pp. 337–339.)

PROTIUM Burm.

Large or small trees, glabrous or nearly so; leaflets few, large, entire; flowers small, whitish, in small or large panicles; fruit rather large and somewhat fleshy at maturity. The woods resemble Birch (*Betula*) and are suitable for the same purposes. (For description of the woods see *T. of T. A.*, pp. 334–337.)

Flowers pediceled.....*P. costaricense.*

Flowers closely sessile.....*P. Copal.*

Protium Copal (Schlecht. & Cham.) Engler. *Copal. Pom* (Maya). *Tontol* (Guatemala). Frequent in forest; southern Mexico. A large or medium-sized, almost glabrous tree; leaflets 3–7, thick, usually acute at the base; flowers small, sessile, white, in short axillary panicles; fruit green and red, ovoid, not lobed, 2.5 cm. long. The resin obtained from the tree is suitable for making varnish, and it probably supplied the copal used by the ancient Mayas in their religious ceremonies. British Honduras specimens have been referred to *P. sessiliflorum* (Rose) Standl., a species of southern Central America, perhaps not distinct from *P. Copal.*

Protium costaricense (Rose) Engler. *Copal Macho.* Hillbank; Fair View; southward to Costa Rica. A tree 10–15 meters high, the trunk 15–20 cm. in diameter; leaflets 5–7, rather thin, long-stalked, somewhat hairy beneath when young but soon glabrate, conspicuously veined, acute or acuminate; fruit almost 2 cm. long.

TETRAGASTRIS Gaertn.

Tetragastris Stevensonii Standl. Field Mus. Bot. 4: 216. 1929. *Carbón.* Type *N. S. Stevenson* 9, without locality; found also at Punta Gorda, between Columbia and Toledo, and on Mullins River Road; ranging southward to Nicaragua. A glabrous tree 12–15 meters high or more, the trunk 25 cm. in diameter; leaflets about 7, thick and leathery; flowers reddish brown, in short panicles; fruit broader than long, often somewhat lobed, 2 cm. broad. Wood similar in structure and properties to that of *Protium.*

MELIACEAE. Mahogany Family

Trees or shrubs; leaves alternate, pinnate, without stipules; flowers mostly small and inconspicuous, the calyx 4–5-lobed; petals 4–5; stamens 5, 8, or 10; fruit a capsule or a drupe. Some of the timbers of this family are among those most highly esteemed for cabinet work and furniture.

Leaves bipinnate, the numerous leaflets toothed; fruit a drupe. . *Melia.*
Leaflets once pinnate, the leaflets entire; fruit a capsule.
Filaments free. Capsule about 3 cm. long; seeds winged. . *Cedrela.*
Filaments united at least to the middle.
Anthers borne on the apex of the stamen tube or its lobes; capsules usually 1 cm. or less in diameter. Seeds not winged..... *Trichilia.*
Anthers borne inside the apex of the stamen tube; capsules mostly 2.5 cm. in diameter or larger.
Seeds winged; ovules 12 in each cell..... *Swietenia.*
Seeds not winged; ovules 1–6 in each cell.
Petals imbricate; seeds surrounded by an aril.... *Trichilia.*
Petals contorted; seed not arillate..... *Carapa.*

CARAPA Aubl.

Carapa guianensis Aubl. *Bastard Mahogany.* Temash River and doubtless elsewhere; extending to South America. A large tree; leaves very large, the 10–14 or more leaflets oblong, acute, 15–30 cm. long or larger, glabrous, leathery; flowers in axillary panicles, the 4 petals 5 mm. long; fruit a woody 4-angled capsule 7–10 cm. in diameter. The seeds are rich in oil used in South America for making soap and for illuminating purposes. The wood is reddish brown, rather hard and compact, mostly straight-grained, rather coarse-textured, works readily, finishes smoothly, and is durable. In some regions it is used extensively for general construction and for furniture.

CEDRELA L. Spanish Cedar

Cedrela mexicana Roem. *Cedar. Cedro. Kulche* (Yucatan, Maya). In forests; widely distributed in tropical America. A very large tree with narrow thick buttresses; leaves large, pinnate, the 10–30 leaflets thin, short-stalked, oblong or lanceolate, entire; flowers greenish, in large panicles, the petals 5–6 mm. long; capsule ellipsoid, 4 cm. long, containing numerous winged seeds. The trees of British Honduras have been referred incorrectly to *C. odorata* L. It may be that other species besides *C. mexicana* occur in the region. (For an account of the wood see p. 32; also *T. of T. A.*, pp. 340–348.)

GUAREA Allem.

Trees or large shrubs; leaflets few or numerous, entire; flowers small, greenish, in chiefly axillary panicles; calyx 4–5-toothed; the

corolla of 4–5 petals; anthers 8 or 10, borne on the inside of the apex of the stamen tube; capsule 3–5-celled, with 1 or 2 seeds in each cell.

Ovary glabrous; leaflets 4–6.....*G. excelsa.*

Ovary hairy; leaflets 10 or more.

Petals 12–13 mm. long.....*G. Chichon.*

Petals 5–7.5 mm. long.....*G. Guara.*

Guarea Chichon C. DC. *Carbón* (?). *Nochocche* (Maya). Toledo District; Stann Creek Valley; Tabasco. A tree 15 meters high, the trunk 75 cm. in diameter; leaflets oblong, mostly 6–7 cm. wide, short-stalked, glabrous; panicles large and many-flowered; calyx 5–6 mm. broad; petals white.

Guarea excelsa HBK. *Cramantee. Carbón* (Honduras). Frequent in forest; Mexico and Central America. A large or medium-sized tree with broad dense crown; leaflets mostly 5 cm. wide or less, obtuse or short-pointed, tufted beneath in the axils of the nerves, otherwise glabrous; panicles small, many-flowered, appressed-hairy; capsule 2 cm. broad. Wood salmon-brown, moderately hard, heavy, tough, and strong, rather splintery, not highly durable; parenchyma in numerous, wavy, concentric bands, producing a laminated structure; timber suitable for many of the purposes for which Birch (*Betula*) is used in the United States.

Guarea Guara (Jacq.) P. Wilson. Forest Home, *Schipp* 1070; ranging to South America. A tree of 10 meters, the trunk 20 cm. in diameter; leaflets oblong, glabrous or nearly so, narrowly acuminate; capsules glabrous.

MELIA L.

Melia Azedarach L. *Paradise Tree. Paraíso* (Honduras). Planted as a shade tree, and also apparently naturalized; native of southeastern Asia. A small tree with panicles of fragrant, showy, lavender and purple flowers; fruit a large translucent drupe. A common shade tree in many parts of tropical America.

SWIETENIA Jacq.

Swietenia macrophylla King. *Mahogany. Caoba. Chiculte* (Maya). *Punab* (Yucatan, Maya). *Honduras Mahogany.* Frequent in forest; Mexico to Colombia. A large tree; leaves large, shining, the 8–12 leaflets lanceolate, unequal, acuminate, 7–15 cm. long or larger, entire, glabrous; flowers small, whitish, in panicles in the leaf axils; capsule ovoid, 12–15 cm. long, acutish, splitting

into 5 valves and freeing the large winged seeds. The most important timber tree in the Colony. (See p. 30; also *T. of T. A.*, pp. 348–356.)

TRICHILIA L.

Large shrubs or trees; leaves pinnate, sometimes reduced to a single leaflet, flowers small, greenish or yellowish, panicled, with 4–5 petals; anthers 4–10, borne on the apex of the tube or its lobes; fruit normally a small 3-valved 3-seeded capsule; seed 1 in each cell, surrounded by a usually red and showy aril.

Panicles small and dense, shorter than the petioles.

Leaflets 3–5, long-acuminate; capsule hairy.....*T. montana.*

Leaflets usually more than 5, obtuse or merely acutish; capsule glabrous.....*T. havanensis.*

Panicles comparatively large, often lax and open, longer than the petioles, sometimes equaling the leaves.

Flowers about 1 mm. long. Panicles very lax and open. *T. minutiflora.*

Flowers much more than 1 mm. long.

Filaments united into a tube.....*T. moschata.*

Filaments free.

Leaflets mostly 2–3.5 cm. wide.....*T. hirta.*

Leaflets mostly 4–6 cm. wide.....*T. cuneata.*

Trichilia cuneata Radlk. *Ixbahach* (Maya). In forest or thickets; Central America. A small tree; leaflets 5–9, obtusely acuminate, hairy beneath; capsule hairy.

Trichilia havanensis Jacq. *Bastard Lime. Limoncillo* (Honduras). Frequent in thickets; widely distributed in tropical America. A large shrub or small tree, sometimes 9 meters high; leaflets obovate or oblong, shining, glabrous, the rachis of the leaf narrowly winged; flowers greenish or whitish. Wood yellowish, light and soft, very easy to work, is not durable; suitable for boxes and general carpentry when protected from the weather.

Trichilia hirta L. *Red Cedar. Kulimziz* (Yucatan, Maya). Occasional in thickets; widely distributed in tropical America. A shrub or small tree; leaves deciduous; leaflets 9–21, lanceolate or ovate, more or less hairy beneath, acute or acuminate; flowers greenish. Wood reddish brown, hard, heavy, strong, and durable, medium-textured, fairly straight-grained, somewhat splintery, takes a high polish, and is suitable for furniture and implements.

Trichilia minutiflora Standl. Trop. Woods 11: 20. 1927. *Wild Lime. Xpukusikil* (Maya). Type from Orange Walk District, *Winzerling* VIII.1 (Yale 9870); Freshwater Creek, *Heyder & Kinloch* 13; Guatemala. A tree; leaflets 7–11, small, lance-oblong, obtusely acuminate, hairy beneath. Wood pale brown, hard, heavy, strong, fine-textured, not durable.

Trichilia montana HBK. *Carbón de Río.* In forest, Temash River; Eldorado, *Kinloch* 38; Central and South America. A shrub or small tree, sometimes 9 meters high with trunk diameter of 15 cm.; rachis of the leaf not winged, the leaflets large, bright green.

Trichilia moschata Swartz. Collected by Schipp along the Guatemalan boundary; Yucatan Peninsula and Jamaica. A tree of 9–15 meters, the trunk 20–30 cm. in diameter; leaflets 3–9, oblong to elliptic, acuminate, glabrous or nearly so; flowers small, white; capsule ovoid to subglobose, 1.5–2 cm. long, densely pubescent. The wood is said to be used in Guatemala for making marimba keys.

MALPIGHIACEAE. Malpighia Family

Trees, shrubs, or woody vines; leaves opposite or whorled, entire or lobed, often with glands on the petioles or on the lower surface of the blade; pubescence often of glistening, appressed hairs which are attached by their middle; sepals 5, usually with glands on their outer surface; petals 5, broad, clawed, often fringed or toothed; fruit a drupe or of samaras or nutlets. The woods are of little or no commercial importance.

Fruit a drupe; plants never scandent.

Petals pink or pale red; flowers in small cymes. Leaves glabrous or nearly so..... *Malpighia.*

Petals yellow; flowers in elongate racemes or panicles.

Styles with tapering slender tips..... *Byrsonima.*

Styles with thickened tips..... *Bunchosia.*

Fruit of 1–3 samaras; plants mostly scandent.

Samaras with lateral as well as dorsal wings.

Wings of the fruit deeply lobed..... *Tetrapteris.*

Wings of the fruit not lobed.

Stipules borne on the petiole above its base; shrubs or small trees..... *Hiraea.*

Stipules inserted at the base of the petiole; vines. *Mascagnia.*

Samaras with dorsal wings only.

Wing of the fruit much reduced and crestlike; perfect stamens 10 ..... *Brachypterys.*

Wings of the samara large, obovate.

Perfect stamens 10; wings of the samara thickened on the outer edge ..... *Heteropteris.*

Perfect stamens 4; wings of the samara thickened on the inner edge ..... *Stigmaphyllon.*

BRACHYPTERYS Juss.

Brachypterys ovata (Cav.) Small. Belize, *Lundell* 4087; ranging to Panama and northern South America. A woody vine; leaves short-petioled, oblong-lanceolate to ovate, minutely sericeous beneath; flowers yellow, showy; samaras hard and bonelike, with very short wings.

BUNCHOSIA Rich.

Shrubs or small trees; leaves short-petioled, entire; flowers yellow, in racemes or small panicles in the leaf axils; fruit a red or orange drupe, 2–3-lobed.

Sepals 4–5 mm. long; leaves large, usually thin and long-acuminate. *B. lanceolata.*

Sepals 2.5–3.5 mm. long; leaves small, thick, mostly obtuse or acute. *B. Swartziana.*

Bunchosia Swartziana Griseb. *Zipche* (Yucatan, Maya). Occasional in thickets or forest, often in low swampy land; Yucatan, West Indies. A shrub or tree 4–7 meters high, the trunk 10 cm. or less in diameter; leaves oblong to elliptic, often lustrous, glabrous, usually 8 cm. long or less.

Bunchosia lanceolata Turcz. *Cojón de Fraile.* Frequent in thickets and secondary forest; Mexico and Central America. A slender shrub 2–3 meters high; leaves mostly 19 cm. long or larger, almost glabrous; racemes strigose; fruit glabrous, yellow or red, 1 cm. broad or larger.

BYRSONIMA Rich.

Shrubs or trees; leaves opposite, without glands, short-stalked, entire; flowers yellow, in terminal racemes or panicles; fruit an ovoid or globose drupe.

Leaves acute or acuminate, usually abundantly tomentose beneath, even in age ..... *B. crassifolia.*

Leaves rounded at the apex, glabrate beneath ..... *B. bucidifolia.*

Byrsonima bucidifolia Standl. *Craboo.* Honey Camp region; Yucatan. A shrub or small tree; leaves obovate or wedge-shaped, often emarginate, paler beneath; fruit yellow, about 12 mm. in diameter. The fruit is edible, and Meyer reports that it is sometimes sold in the markets.

Byrsonima crassifolia (L.) DC. *Craboo, Crapoo, Wild Craboo. Zacpah* (Maya). *Nanche* (Yucatan). Common in pine forest and thickets; widely distributed in tropical America. A large shrub or small tree, as much as 9 meters high, with trunk diameter of 12 cm.; leaves oblong to obovate, densely grayish- or rusty-tomentose beneath, thick; petals large, bright yellow, turning reddish in age; fruit globose, yellow, 1 cm. or more in diameter. The fruit has a flavor somewhat suggestive of green apples, and it is much eaten in Central America generally, at least by children. The tree is a highly ornamental one when in blossom, bearing its golden flowers in the greatest profusion. Wood dull reddish or pinkish brown, rather hard and heavy, strong but brittle, rather coarse-textured, roe-grained, fairly easy to work, but does not finish very smoothly, is only moderately durable; suitable for general construction. (For further description of wood see *T. of T. A.*, pp. 363–365.)

HETEROPTERIS HBK.

Woody vines or sometimes erect shrubs; leaves opposite, entire; flowers usually large, in panicled cymes; calyx glandless or with 8 glands; petals entire or toothed; fruit of 2–3 large samaras.

Leaves thin, densely tomentose beneath..... *H. Beecheyana.*

Leaves leathery, glabrate.

Samaras with broad wings 2 cm. long or larger..... *H. laurifolia.*

Samaras merely with small crests..... *H. heterocarpa.*

Heteropteris Beecheyana Juss. *Sobach* (Maya). In broken pine ridge and thickets; Mexico to Colombia. A large woody vine; leaves oblong to oval, rounded to acute at the apex, conspicuously veined; flowers showy, pink, panicled; samaras with long broad wings, often colored red or purple.

Heteropteris heterocarpa (Standl.) Standl., comb. nov. *Banisteria heterocarpa* Standl. Trop. Woods 9: 11. 1927. Type from Orange Walk District, *Winzerling* V.15; Honey Camp, *Meyer* 120; New Town, *Schipp* 818. Northern River, *Gentle* 1309; Corozal District, *Gentle* 504. A spreading shrub or small tree 2–4.5 meters

high; leaves oblong, very thick, obtuse to acute, short-stalked; flowers yellow.

Heteropteris laurifolia (L.) Juss. *Tietie.* A large shrub or a vine, as much as 6 meters high, with trunk diameter of 7.5 cm.; leaves lanceolate to ovate, acute or short-acuminate, shining; flowers large, bright yellow; branches of the panicle densely rusty-tomentose.

HIRAEA Jacq.

Shrubs or small trees, sometimes vines; leaves opposite, entire, leathery, short-petioled; stipules very small, borne on the petioles; petals yellow; fruit of 3 samaras having large broad thin wings.

Leaves rounded or very obtuse at the apex..... *H. obovata.*

Leaves acute or acuminate.

Umbels with few, usually 3–5, flowers, the pedicels slender. *H. fagifolia.*

Umbels dense, with numerous flowers, the pedicels stout. *H. smilacina.*

Hiraea obovata (HBK.) Niedenzu. Maskall; Toledo; Yucatan, Campeche, Central America. An erect or sometimes scandent shrub or a small tree; leaves oblong or obovate, 4–15 cm. long, almost glabrous beneath.

Hiraea fagifolia (DC.) Juss. Occasional in open forest; Central America and northern South America. A shrub or small tree; leaves short-stalked, obovate to ovate or elliptic, acute or acuminate, obtuse at the base, glabrate; flowers showy, yellow, in short-stalked umbels; samaras large and broadly winged, 3–5 cm. wide.

Hiraea smilacina Standl. In forest, Río Grande, *Schipp* 1138; Panama. A woody vine 12 meters long, the stems 2.5 cm. in diameter; leaves large, oval-elliptic, abruptly acuminate, glabrate; umbels large and showy, the peduncles often white-tomentose.

MALPIGHIA L.

Shrubs or small trees; leaves opposite, entire; flowers in small axillary cymes; calyx with 6–10 glands; petals toothed; fruit a red drupe.

Leaves acute or acuminate..... *M. glabra.*

Leaves very obtuse or rounded at the apex..... *M. punicifolia.*

Malpighia glabra L. *Wild Craboo. Simche* (Maya). *Nance, Nancén* (Yucatan). Hillbank; Corozal District; widely distributed

in tropical America. A shrub or small tree, as much as 6 meters high, with trunk diameter of 20 cm.; leaves small, ovate or elliptic, glabrate; flowers pink; fruit a small red drupe. The acid fruit is edible. The bark is said to have been employed in some regions for tanning.

Malpighia punicifolia L. *Uzte* (Yucatan, Maya). Without definite locality, *Castillo;* Yucatan, West Indies, northern South America. A shrub or small tree; leaves oblong to obovate, glabrous or nearly so; flowers pink. The edible fruits bear a few needle-like hairs that are easily detached, and cause intense irritation if they penetrate the skin.

MASCAGNIA Bertero

Mascagnia macroptera (Moc. & Sessé) Niedenzu. El Cayo, *Chanek* 133; Guatemala and Mexico. A large or small, woody vine; leaves lanceolate to oval, petioled, acute to rounded at the apex, glabrate; flowers large, bright yellow; samaras 4.5–5.5 cm. wide, the margins toothed or wavy.

Mascagnia vacciniifolia Niedenzu. In forest, Machaca, *Schipp* S657; Guatemala and Mexico. A slender vine as much as 15 meters long, the stem 2.5 cm. in diameter; leaves mostly 1–3.5 cm. long, rounded and usually emarginate at the apex; petals purple; wings of the fruit only 1 cm. long.

STIGMAPHYLLON Juss.

Slender woody vines; leaves broad, opposite, entire or toothed, long-stalked; flowers large, yellow, in stalked axillary umbel-like corymbs, the petals toothed; fruit of 2–3 samaras.

Leaf blades glabrous, entire or nearly so.

Leaf blades deeply cordate at the base.....*S. ciliatum.*

Leaf blades rounded at the base.....*S. ellipticum.*

Leaf blades copiously pubescent beneath, not cordate, often lobed or toothed.

Wing conspicuously contracted above the body of the samara. *S. Lindenianum.*

Wing broad, not constricted above the samara body..*S. puberum.*

Stigmaphyllon ciliatum (Lam.) Juss. Stann Creek, in thickets near the seashore; West Indies and South America. A slender vine; leaves broadly ovate-cordate, small, acute, pale beneath, glandular-ciliate; flowers 3 cm. broad, bright yellow; wing about as long as the

body of the samara. Known on the North American continent only from British Honduras.

Stigmaphyllon ellipticum (HBK.) Juss. *H. mucronatum* Juss. Punta Gorda, *Schipp* S456; a species of wide distribution. A large or small, slender vine, almost glabrous; leaves chiefly oblong, acute or acuminate; flowers bright yellow, large and showy.

Stigmaphyllon Lindenianum Juss. Middlesex, open thickets, *Schipp;* Mexico and Central America. A large or small vine; leaves thin, large, covered beneath with dense or sparse silvery hairs; wing of the samara much longer than the body.

Stigmaphyllon puberum Juss. Eldorado, in forest; Corozal-Consejo Road; West Indies, northern South America. A large slender woody vine; leaves slender-stalked, broadly ovate or elliptic, large, acute or acuminate, silky beneath; samaras 2–3 cm. long.

TETRAPTERIS Cav.

Woody vines with opposite entire leaves; flowers showy, the calyx with 8 glands; fruit of 3 samaras, each of these with 4 narrow wings.

Lower wings of the samara almost as large as the upper ones. *T. Schiedeana.*

Lower wings of the samara greatly reduced and much smaller than the upper ones..... *T. glabrifolia.*

Tetrapteris glabrifolia (Griseb.) Small. Río Grande, in forest, *Schipp* 1147; Costa Rica and Panama. A large vine as much as 15 meters long, the stem 5 cm. in diameter; leaves 6–15 cm. long, glabrous or nearly so; wings of the fruit as much as 4 cm. long.

Tetrapteris Schiedeana Schlecht. & Cham. Occasional in thickets; Mexico and Central America. A large or small, woody vine; leaves short-stalked, lanceolate to elliptic, acute or obtuse, glabrate or pubescent beneath; flowers large, yellow; fruit of three 4-winged samaras.

TRIGONIACEAE. Trigonia Family

TRIGONIA Aubl.

Trigonia floribunda Oerst. Northern River, *Gentle* 876; southward to Panama. A woody vine; leaves opposite, short-petioled, entire, densely white-tomentose beneath; flowers small, white, in terminal panicles; petals 5, unequal; stamens 10; fruit a large 3-angled capsule.

VOCHYSIACEAE. Vochysia Family

VOCHYSIA (Aubl.) Juss.

Vochysia hondurensis Sprague, Kew Bull. 183. 1922. Type from Belize, *Campbell* 10; frequent in forest, especially in the south; Guatemala to Costa Rica. *White Mahogany, Yemeri, Emeri, Emery, San Juan.* A tall tree, often 15–30 meters high, with pale trunk and small narrow crown; leaves in whorls of 3–4, short-petioled, oblong or oblanceolate-oblong, 8–14 cm. long, rounded to acute at the apex, glabrous; flowers bright yellow, in narrow dense panicles at the ends of the branches and in the axils of the leaves; sepals 5, one of them produced as a spur; petals 3; fruit a 3-angled 3-celled capsule 4 cm. long. A conspicuous and exceedingly handsome tree when in flower. Wood reddish brown or pale brown with a pinkish hue and a golden sub-luster, although the surface may appear rather dull and "mealy"; light in weight, fairly tough, coarse-textured, inclined to be gritty and hard on tools when dry, holds its place well when manufactured; dark-colored material fairly resistant to decay or insects; rays distinct; parenchyma about the large pores and in irregular concentric bands, producing distinct pattern (in proper light) on tangential surface; vertical traumatic gum ducts often present and sometimes large enough to constitute a defect in lumber; timber used in the southern part of the Colony for boards and the construction of dories; has been exported in limited amount to the United States for veneers.

POLYGALACEAE. Polygala Family

Herbs or climbing shrubs; leaves opposite or alternate, entire, without stipules; flowers perfect, small or large, irregular, with 5 inferior sepals, the 2 lateral sepals often large and colored; petals usually 3 and more or less united; stamens normally 8.

Herbs or erect shrubs..... *Polygala.*

Woody vines.

Fruit a large samara..... *Securidaca.*

Fruit a narrow capsule..... *Bredemeyera.*

BREDEMEYERA Willd.

Bredemeyera lucida (Benth.) Benn. Occasional in thickets or open forest; Guianas and Brazil. A large vine, the stems 5–6 cm. thick; leaves leathery, short-petiolate, oblong or lance-oblong, obtuse, with minute scattered appressed hairs; flowers densely clustered, small, the clusters racemose; capsule 10–14 mm. long, glabrous;

seeds with a tuft of long hairs at the tip. In North America the genus is known only from the Yucatan Peninsula.

POLYGALA L.

Polygala adenophora DC.

Polygala asperuloides HBK.

Polygala hygrophila HBK.

Polygala incarnata L.

Polygala jamaicensis Chodat. Camp 36, Guatemalan boundary, *Schipp* 1254; Petén; Jamaica. A shrub 1 meter high; leaves short-petiolate, ovate, 4–8 cm. long, obtuse or retuse at the apex, strigillose; flowers yellow, 4 mm. long, in short racemes.

Polygala longicaulis HBK.

Polygala paniculata L. Flowers purple or white (f. *leucoptera* Blake).

Polygala Timoutou Aubl. All Pines.

Polygala variabilis HBK.

SECURIDACA L.

Small or large, woody vines; leaves alternate, entire, with small stipular glands; flowers small, pink, in racemes; fruit a samara with a large broad wing.

Leaves with closely appressed hairs on lower surface. . .*S. diversifolia.*

Leaves with short spreading hairs on lower surface. . . .*S. sylvestris.*

Securidaca diversifolia (L.) Blake. *S. erecta* Jacq. In thickets; widely distributed in tropical America. A small or large vine; leaves almost sessile, ovate to oblong, acute, reticulate-veined, the pubescence of minute appressed hairs; flowers showy, bright pink, in racemes; samaras 4–7 cm. long, with a broad wing. A handsome plant in flower, suggestive of some of the Leguminosae.

Securidaca sylvestris Schlecht. Maskall, *Gentle* 1194; Panama to Mexico. Leaves ovate to elliptic; racemes 2–10 cm. long, the flowers 1 cm. long.

DICHAPETALACEAE. Dichapetalum Family

DICHAPETALUM Thouars

Dichapetalum Donnell-Smithii Engler. Middlesex and All Pines; southward to Panama. A shrub or a woody vine, sometimes

climbing to a height of 9 meters; leaves alternate, short-petioled, with stipules, oblong, acute or acuminate, entire, softly hairy beneath; flowers small, cream-colored, in axillary cymes, the peduncle adnate to the petiole; sepals and petals each 5; stamens 5; fruit a densely pubescent drupe 1.5–2 cm. long.

EUPHORBIACEAE. Spurge Family

One of the largest families of plants, composed of diverse groups of unlike appearance; sap usually milky; leaves commonly alternate and simple; pubescence often of branched hairs or of scales; flowers mostly small and unisexual, with or without petals; fruit most often a 3-celled capsule.

Plants climbing.

Flower clusters enclosed by 2 enlarged and often colored bracts; capsule 3-celled..... *Dalechampia.*

Flower clusters not enclosed by bracts; capsule 4-celled. *Plukenetia.*

Plants not climbing.

Flowers enclosed in a cup-like involucre containing both staminate and pistillate flowers. Herbs..... *Euphorbia.*

Flowers not involucrate or, if so, the involucre containing flowers of only one sex.

Ovules 2 in each cell of the ovary; stamens, at least the outer ones, opposite the sepals.

Pubescence of small scales; flowers dioecious..... *Hieronyma.*

Pubescence none or of simple hairs; flowers monoecious.

Flowers chiefly spicate; leaves leathery..... *Amanoa.*

Flowers not spicate; leaves thin..... *Phyllanthus.*

Ovule 1 in each cell; stamens, at least the outer ones, alternate with the sepals.

Flowers in dichotomous cymes..... *Jatropha.*

Flowers variously arranged but not in dichotomous cymes.

Leaves deeply lobed.

Pubescence of branched hairs..... *Jatropha.*

Pubescence none or of simple hairs.

Lobes of the leaves entire..... *Manihot.*

Lobes of the leaves toothed..... *Ricinus.*

Leaves not lobed.

Petiole bearing 2 large glands below the blade. *Sapium.*

Petiole without conspicuous glands.

Flowers in spike-like panicles, the panicles with conspicuous large glands.....*Mabea.*

Flowers not panicled, or, if so, the inflorescence without conspicuous glands.

Fruit fleshy, resembling a small apple. A tree of seashores.....*Hippomane.*

Fruit a dry capsule, or a small pubescent drupe with scant flesh.

Fruit 1-seeded. Leaves entire; flowers axillary. *Drypetes.*

Fruit 3-seeded.

Pistillate flowers spicate, subtended by green toothed bracts. Herbs, shrubs, or trees; staminate flowers in catkin-like spikes. *Acalypha.*

Pistillate flowers variously arranged, but not subtended by green toothed bracts.

Plants herbaceous.....*Caperonia.*

Plants woody.

Pubescence of minute scales. Flowers clustered in the leaf axils.....*Pera.*

Pubescence none or of hairs, if of scales, the flowers racemose.

Flowers, at least the staminate, panicled. *Alchornea.*

Flowers not panicled.

Petals present, at least in the staminate flowers. Pubescence of branched hairs; flowers racemose....*Croton.*

Petals none.

Flowers clustered in the leaf axils or on naked branches...*Adelia.*

Flowers spicate.

Leaves densely pubescent. *Bernardia.*

Leaves glabrous.

Calyx of the staminate flower almost obsolete.
Sebastiania.

Calyx of the staminate flower well developed, of 3 sepals.
Gymnanthes.

ACALYPHA L.

Herbs, shrubs, or small trees; leaves alternate, long-petiolate, usually crenate, with stipules; flowers monoecious, in long or short spikes; pistillate flowers subtended by dentate foliaceous bracts; fruit a small 3-celled capsule.

Herbs.

Flower spikes all axillary, the pistillate ones 1 cm. thick.
A. arvensis.

Flower spikes partly terminal, the pistillate 5 mm. thick. *A. setosa.*

Shrubs or small trees.

Pistillate flowers pediceled, in panicles..... *A. lancetillae.*

Pistillate flowers sessile, in spikes.

Lower bracts of the pistillate inflorescence greatly enlarged and leaf-like. Young branches hirsute..... *A. chlorocardia.*

Lower bracts little larger than the upper ones, not leaf-like.

Leaves broadly ovate, commonly 10–15 cm. wide, velvety-pubescent beneath; pistillate spikes without staminate flowers..... *A. macrostachya.*

Leaves lance-oblong or elliptic-oblong, mostly 3–6 cm. wide, pubescent or glabrate beneath; pistillate spikes with staminate flowers above..... *A. diversifolia.*

Acalypha arvensis Poepp. & Endl.

Acalypha chlorocardia Standl. Field Mus. Bot. 8: 18. 1930. Type from Middlesex, on river bank, *Schipp* S45. A shrub 1 meter high; leaves large, ovate, serrate, long-acuminate.

Acalypha diversifolia Jacq. *Costilla de danto* (Honduras). Frequent in thickets and forest; widely distributed in tropical America. A slender shrub or small tree, sometimes 8 meters high, with a trunk 10 cm. in diameter; flowers green, in slender catkin-like spikes. One of the most common shrubs of second-growth in Central America generally. Wood yellowish brown, compact, fine-textured; not utilized.

Acalypha lancetillae Standl. Jacinto Hills; headwaters of the Río Grande; Guatemala and Honduras. A slender shrub 1–2 meters high; leaves short-petioled, oblanceolate-oblong, acuminate, coarsely toothed, softly pubescent beneath, narrowed to an obtuse or narrowly rounded base.

Acalypha macrostachya Jacq. Frequent in thickets; widely distributed in tropical America. A stout shrub 2 meters high; spikes often as much as 40 cm. long.

Acalypha setosa A. Rich.

ADELIA L.

Adelia barbinervis Schlecht. & Cham. Frequent in forest or thickets; Mexico to Guatemala. A shrub or small tree, sometimes 7.5 meters high, with a trunk 10 cm. in diameter, the branches frequently spine-like; leaves oblong-obovate, acuminate, sinuate or entire, glabrate; flowers minute, greenish, clustered in the leaf axils, the pistillate on long slender pedicels; capsule small, 3-lobed.

ALCHORNEA Swartz

Trees or shrubs; leaves petioled, usually toothed; flowers dioecious or monoecious, in lateral spikes or racemes; fruit a 2–3-celled capsule.

Leaves narrowly oblong or lance-oblong, penninerved . . . *A. oblongifolia*.

Leaves broadly ovate or elliptic-oblong, palmate-nerved . . . *A. latifolia*.

Alchornea latifolia Swartz. *Canelito* (Honduras). Big Creek, *Schipp;* southern Mexico to Honduras; West Indies. A spreading tree 15 meters high or less, the trunk up to 45 cm. in diameter, the branches often elongate and drooping or trailing; leaves long-petiolate, broadly ovate to elliptic-oblong, obtuse to cordate at the base, coarsely dentate, glabrous or nearly so; staminate flowers in large pubescent panicles. Wood brown, rather light and soft, medium-textured, with numerous radial canals the size of pinholes; not utilized.

Alchornea oblongifolia Standl. Carnegie Inst. Wash. Publ. 461: 66. 1935. Type collected in forest, Camp 35, Guatemalan boundary, *Schipp* S729. A tree of 15 meters, the trunk 45 cm. in diameter; leaves 16–24 cm. long, short-acuminate, glabrous, crenate-serrate; capsule 3-celled.

AMANOA Aubl.

Amanoa grandiflora Muell. Arg. Temash River; Moho River; Surinam and British Guiana. A glabrous tree as much as 12 meters

high, with a trunk diameter of 30 cm.; leaves short-petiolate, oblong or elliptic, acuminate, obtuse or acute at the base, entire; flowers small, clustered in the leaf axils or arranged in simple or branched, spike-like inflorescences; capsule 2–3 cm. long. This is the only Central American representative of the genus. Wood brown, hard, heavy, tough, and strong, fine-textured, with interwoven grain; parenchyma in very numerous, fine lines producing an irregular network with the closely spaced rays; no local uses, but probably suitable for tool handles.

BERNARDIA Adans.

Bernardia interrupta (Schlecht.) Muell. Arg. *Waika Ribbon.* El Cayo District; southern Mexico. A shrub or tree, sometimes with a trunk 15 cm. in diameter; leaves petiolate, oblong to elliptic or obovate, sinuate-dentate, acuminate, sparsely stellate-pubescent or glabrate; flowers green, dioecious, spicate; capsule 3-lobed, 12 mm. broad. Wood pale brown, with silky luster; moderately hard, tough and strong, fine-textured, easy to work, finishes very smoothly, is not resistant to decay; probably suitable for tool handles.

CAPERONIA St. Hil.

Caperonia palustris (L.) St. Hil.

CODIAEUM Juss.

Codiaeum variegatum (L.) Blume. *Laurel* (Honduras). Cultivated commonly as an ornamental plant; native of the Pacific islands. A shrub, noteworthy for the great variation exhibited by its leaves, which are of various shapes and innumerable combinations of colors. The plant usually is known incorrectly by the name Croton.

CROTON L.

Herbs, shrubs, or trees with stellate or scurfy pubescence; leaves alternate; flowers racemose, the pistillate below, the staminate above; fruit a 3-lobed capsule.

Leaves deeply lobed, or coarsely toothed; plants annual.

Leaves deeply lobed.....*C. lobatus.*

Leaves coarsely toothed.....*C. tragioides.*

Leaves not lobed, entire or nearly so; plants perennial.

Leaves obtuse or rounded at the apex; plants essentially or wholly herbaceous, 1 meter high or less.....*C. punctatus.*

Leaves acute or acuminate; trees or tall shrubs.

Pubescence of minute, appressed, silvery or brown scales.

Leaves mostly oblong; capsule tuberculate.....*C. glabellus.*

Leaves ovate; capsule not tuberculate.....*C. niveus.*

Pubescence of branched hairs.

Leaves long-petiolate, 10–20 cm. long; flowers in long, much interrupted racemes.....*C. pyramidalis.*

Leaves short-petiolate, smaller; flowers in short racemes.

Flowers sessile or nearly so, in stout dense racemes. *C. flavens.*

Flowers slender-pediceled, in lax and interrupted racemes. *C. humilis.*

Croton flavens L. *Ekbalam, Xixim coh* (Yucatan, Maya). El Cayo, *Chanek* 183; Yucatan to Honduras. An aromatic shrub, densely stellate-tomentose throughout; leaves oblong-ovate, rounded or cordate at the base.

Croton glabellus L. *Wild Cinnamon. Chuts* (Yucatan, Maya). *Perescuch* (Petén). Frequent in forest or thickets; southern Mexico to the West Indies and northern South America. A tree 6–7.5 meters high, the trunk 12 cm. or less in diameter, appearing glabrous but with minute scattered brownish scales on the foliage; leaves oblong or elliptic-oblong. Wood brownish, moderately hard, rather fine-textured; occasionally with large radial canals; not utilized.

Croton humilis L. *Ikaban, Xic gaban* (Yucatan, Maya). Maskall Pine Ridge, *Gentle* 1170; Mexico. A low aromatic shrub, densely stellate-pubescent; leaves ovate or lanceolate, sometimes glabrate, obtuse or rounded at the base; sepals glandular-ciliate.

Croton lobatus L.

Croton niveus Jacq. *Chul* (Yucatan, Maya). El Cayo District, *Chanek;* Mexico to northern South America. A large shrub or a small tree, covered with minute silvery scales; leaves usually cordate at the base.

Croton punctatus Jacq. A seashore plant.

Croton pyramidalis Donn. Smith. Frequent in forest and thickets; Guatemala and Honduras. A large shrub or small tree, sometimes 9 meters high with a trunk diameter of 10 cm.

Croton tragioides Blake. *Quema-nariz* (Honduras). Forest Home, *Schipp* 1020.

DALECHAMPIA L.

Dalechampia laevigata Standl. Corozal District, *Gentle* 319.

Dalechampia scandens L. *Moolcoh* (Yucatan, Maya). All Pines, *Schipp* S140.

Dalechampia Schippii Standl. Field Mus. Bot. 11: 133. 1932. Type from Sarawee, pine ridge, *Schipp* S181; Manatee Pine Ridge, *Gentle* 76; Stann Creek Valley, *Pelly.*

Dalechampia Schottii Greenm. *Moolcoh* (Yucatan, Maya). Big Creek, *Schipp* 189.

Dalechampia spathulata (Scheidw.) Baill. Jacinto Hills, *Schipp* 1298.

DRYPETES Vahl

Shrubs or trees with glabrous coriaceous leaves; flowers axillary, clustered, dioecious, without petals; stamens 2–8; fruit drupaceous, usually 1-seeded.

Leaves acute at the base, narrowed to the petiole; fruit 1.5 cm. long or larger ..... *D. Brownii.*

Leaves obtuse or rounded at the base; fruit less than 1 cm. long. *D. lateriflora.*

Drypetes Brownii Standl. Trop. Woods 20: 20. 1929. *Bullhoof Macho.* Type from Hillbank, *C. S. Brown* 38; El Cayo District, *Bartlett* 12865; Eldorado, *Schipp;* Petén. A glabrous tree 14 meters high, the trunk 15–20 cm. in diameter; leaves alternate, short-petiolate, leathery, oblong, acuminate, entire, unequal at the base; flowers dioecious, without petals, 2.5 mm. long, clustered in the leaf axils; fruit brown, globose, 1-celled and 1-seeded, 1.5 cm. long, with thin flesh. Wood yellowish brown, often with reddish brown streaks; hard, heavy, strong, somewhat brittle, medium-textured, fairly straight-grained, not difficult to work, finishes smoothly, is not durable; parenchyma in numerous, fine lines of the same width as the rays and forming a network with them; timber suitable for implements and tool handles.

Drypetes lateriflora (Swartz) Krug & Urban. Collected by Schipp along the Guatemalan boundary; Petén, Mexico, and the West Indies. A tree 10 meters high, the trunk 20 cm. in diameter; leaves oblong or lance-oblong, acuminate; flowers 2 mm. long.

EUPHORBIA L. Spurge

Euphorbia Armourii Millsp.

Euphorbia Blodgettii Engelm.

Euphorbia buxifolia L. A plant of sea beaches.

Euphorbia graminea Jacq. *Onobkax* (Yucatan, Maya).

Euphorbia heterophylla L. *Red Head. Hobonkax* (Yucatan, Maya).

Euphorbia hirta L. *Golondrina* (Yucatan). One of the most abundant weeds of tropical America.

Euphorbia hypericifolia L. *Chickenweed, Pisabed. Toplanxiu* (Yucatan, Maya).

Euphorbia hyssopifolia L. El Cayo District.

Euphorbia thymifolia L. *Chickenweed. Golondrina* (Honduras).

Euphorbia trichotoma HBK. Freshwater Cay, *Schipp* 929.

GYMNANTHES Swartz

Gymnanthes lucida Swartz. *False Lignum Vitae.* Occasional; Yucatan, Florida, West Indies. A glabrous shrub or tree, sometimes 10 meters high; leaves obovate-oblong, obtuse, serrulate or entire; flowers small, green, spicate; fruit a capsule. The milky sap is reported to be very poisonous if in contact with the skin. This plant has no resemblance to the true Lignum Vitae (*Guaiacum*) of the family Zygophyllaceae. The heartwood is variegated olive-brown, often with dark streaks; sapwood thin, white, hard, heavy, strong, very fine-textured, takes a lustrous finish, and is durable; highly attractive wood for walking sticks, handles, articles of turnery, etc. (For detailed description of the wood see *T. of T. A.*, pp. 373–374.)

HIERONYMA Allem.

Trees; leaves alternate, petiolate, entire, penninerved, lepidote; flowers dioecious, without petals, small, racemose or paniculate, axillary; fruit small, drupaceous, 1-seeded.

Stipules large, petiolate, persistent; leaves chiefly ovate or broadly elliptic, rounded or obtuse at the base..... *H. alchorneoides.*

Stipules small, deciduous; leaves oblong, acute at the base. *H. oblonga.*

Hieronyma alchorneoides Allem. *Curtidor* (Honduras). Base of Cockscomb Mountains, in forest, *Schipp* 541; southward through Central America to Brazil. A tree 12 meters high, the trunk 25 cm. in diameter; leaves large, acuminate, very sparsely lepidote beneath; drupes black, 2–3 mm. long. Sapwood pinkish white; heartwood very dark brown, exuding a blackish sap when freshly cut; rather

hard and heavy, of uneven and mostly coarse texture, difficult to work, inclined to warp, appears durable; apparently not utilized. (For further description of the wood see *T. of T. A.*, pp. 370–371.)

Hieronyma oblonga (Tul.) Muell. Arg. Sittee River, secondary forest, *Schipp* 592; southern Mexico; Costa Rica to Brazil. A tree 11 meters high, the trunk 22 cm. in diameter; leaves almost glabrous, acuminate; flowers white.

HIPPOMANE L.

Hippomane Mancinella L. *Manchineel. Manzanillo* (Central America). Frequent on seashores; widely distributed in tropical America. A small glabrous tree with smooth bark; leaves oblong-ovate to oval, acute, serrulate; fruit resembling a small green apple. A characteristic tree of seashores. The milky latex in contact with the flesh often produces intense irritation, with blistering and swelling. The fruit is poisonous, but it is not of such a nature that it is likely to be eaten. Wood suggests Circassian Walnut and is excellent for cabinet work and furniture. (For description of the timber see *T. of T. A.*, pp. 371–373.)

JATROPHA L.

Herbs, shrubs, or small trees; leaves alternate, long-petiolate; flowers usually monoecious, with or without petals, in cymes; fruit a capsule.

Leaves deeply lobed, with narrow segments; plants armed with stinging hairs.....*J. tubulosa.*

Leaves entire or very shallowly lobed, with broad lobes; plants unarmed.

Leaves entire.....*J. Gaumeri.*

Leaves shallowly lobed.....*J. Curcas.*

Jatropha Curcas L. *Piñón* (Honduras). *Xkakalche* (Yucatan, Maya). Occasional, at least in cultivation; widely distributed in tropical America. A shrub or small tree with few thick branches; leaves 10–15 cm. wide, almost glabrous; flowers greenish yellow, in long-stalked cymes; fruit drupelike, fleshy, the seeds 2 cm. in diameter. The seeds contain 25 to 40 per cent of an odorless oil which has been employed in making paints and soap and as a lubricant. They have an agreeable flavor but so violent purgative properties that it is dangerous to eat them, although the roasted kernels are said to be safe for human food.

Jatropha Gaumeri Greenm. *Wild Physic Nut. Piñón. Chipche* (Maya). *Pomolche* (Yucatan, Maya). Northern part of the Colony; Yucatan. A shrub or tree 3–5 meters high, the trunk sometimes 50 cm. in diameter; leaves rounded-cordate, entire, glabrous or nearly so; flowers in small, mostly sessile cymes.

Jatropha tubulosa Muell. Arg. *Nettle. Picapica. Xchai* (Maya). Frequent in thickets; widely distributed in tropical America. A shrub or coarse herb 1–2 meters high; leaves large, the lobes coarsely toothed; flowers white and rather showy, in long-stalked cymes. The long hairs that cover all parts of the plant sting the flesh most painfully. The young leaves sometimes are cooked and eaten as a vegetable.

Jatropha aconitifolia Mill. is cultivated in some parts of British Honduras, as it is in other near-by regions. It is much like *J. tubulosa,* but bears few stinging hairs. The young leaves are cooked and eaten like spinach.

JULOCROTON Mart.

Julocroton argenteus Didr. Belize River, *Lundell* 4113.

MABEA Aubl.

Mabea occidentalis Benth. Temash River, *Kinloch* 44; southern Mexico to northern South America. A slender glabrous shrub 2.5 meters high; leaves alternate, short-petioled, oblong, entire, cuspidate-acuminate, pale beneath; flowers in terminal raceme-like panicles, the staminate flowers small spherical balls of numerous stamens; fruit a 3-lobed capsule; branches of the panicle with large sessile glands.

MANIHOT Adans.

Manihot esculenta Crantz. *Cassava. Yuca. Tsin* (Maya). Cultivated for its edible roots, and also becoming naturalized. This vegetable is most popular among the Caribs. For a large part of South America it is the most important source of bread or starch.

PERA Mutis

Pera barbellata Standl. Field Mus. Bot. 8: 19. 1930. Type from Mullins River Road, in jungle, *Schipp* 201; All Pines, secondary forest, *Schipp* 568; Petén. A tree 9–12 meters high, the trunk 15–22 cm. in diameter; leaves alternate, oblong, acuminate, entire, with a few minute scales on the lower surface, tufted in the axils of the

nerves; flowers small, clustered in the leaf axils; fruit a small capsule. Another species of the genus occurs in Panama.

PHYLLANTHUS L.

Herbs, shrubs, or trees; leaves alternate, entire, usually 2-ranked; flowers very small, green, commonly solitary or clustered in the leaf axils; fruit baccate or more commonly a 3-celled capsule.

Leaves acute or acuminate; shrubs or trees.

Flowers panicled.

Fruit fleshy; leaves 4–7 cm. long.....*P. acidus.*

Fruit dry; leaves mostly 8–12 cm. long.....*P. glaucescens.*

Flowers solitary or clustered in the leaf axils.

Branches green, angled; leaves mostly 3–5 cm. long.
P. brasiliensis.

Branches, except the youngest, reddish brown; leaves larger.

Lateral nerves of the leaves about 5 pairs.....*P. Bartlettii.*

Lateral nerves about 9 pairs.....*P. nobilis.*

Leaves obtuse or rounded at the apex; herbs or low shrubs.

Leaves 6–15 mm. wide; a low shrub.....*P. ferax.*

Leaves less than 5 mm. wide.

Stems fistulose-thickened at the base.....*P. diffusus.*

Stems not thickened at the base.

Plants usually with weak branches from the base, the branches spreading, the upper ones surpassing the main stem.
P. Niruri.

Plants without basal branches, the branches ascending, not exceeding the main stem.....*P. carolinensis.*

Phyllanthus acidus (L.) Skeels. *Wild Plum. Grosella* (Yucatan). Sometimes known as Star Gooseberry or Otaheite Gooseberry. Planted and becoming naturalized; native of the East Indies. A glabrous tree; flowers small, green or pink, panicled on old branches; fruit a large green drupe, conspicuously ribbed. The extremely sour fruit sometimes is eaten, especially in the form of preserves.

Phyllanthus Bartlettii Standl. Carnegie Inst. Wash. Publ. 461: 68. 1935. Type from river bluffs at El Cayo, *Bartlett* 11441; collected also at San Antonio, *Bartlett* 13037. A slender shrub 60–120 cm. high, glabrous or nearly so; leaves lance-oblong or ovate-oblong, 5–7.5 cm. long, obtuse or acute at the base.

Phyllanthus brasiliensis (Aubl.) Poir. *Ciruelillo. Kahyuo* (Yucatan, Maya). *P. Conami* Swartz. Frequent in second-growth thickets; widely distributed in tropical America. A slender glabrous shrub or small tree; leaves two-ranked, the branches suggesting the fronds of a fern.

Phyllanthus carolinensis Walt.

Phyllanthus diffusus Klotzsch. Honey Camp, *Meyer* 131.

Phyllanthus ferax Standl. El Cayo, *Bartlett* 12933; adjacent Guatemala. A very slender shrub, sometimes a meter high.

Phyllanthus glaucescens HBK. *Monkey Rattle. Pixton* (Maya). Northern part of Colony; Yucatan, Campeche, Guatemala, Salvador. A glabrous shrub or small tree; leaves oval to orbicular; panicles shorter than the leaves; capsule more than 2 cm. in diameter.

Phyllanthus Niruri L.

Phyllanthus nobilis (L. f.) Muell. Arg. *Clawberry. Xnabalche* (Yucatan, Maya). Frequent in thickets; widely distributed in tropical America. A glabrous shrub or small tree. Var. *hypomalacus* Standl., with leaves pubescent beneath, has been collected at New River, *Gentle* 538.

PLUKENETIA L.

Plukenetia angustifolia Standl. Big Creek, edge of jungle, *Schipp* 156; Maskall Pine Ridge, *Gentle* 1091; Guatemala and Honduras. A slender woody vine; leaves alternate, oblong or lance-oblong, acuminate, acute to rounded at the base, inconspicuously serrate, almost glabrous; flowers minute, green, in long slender bracted racemes; capsule deeply 4-lobed.

RICINUS L.

Ricinus communis L. *Castor Bean. Higuerilla. Koch* (Yucatan, Maya). Cultivated and naturalized; native of tropical Africa. The seeds are the source of castor oil.

SAPIUM Jacq.

Sapium jamaicense Swartz. *Leche de María.* Honey Camp region; Forest Home; Central America and the West Indies. A large glabrous tree, sometimes 18 meters high, with milky latex; easily recognized by the leaves, which are oblong, petioled, inconspicuously serrate, and have 2 conspicuous glands on the petiole just below the blade; flowers in dense spikes; fruit a capsule. The latex of some

Sapium species growing in Central America is reputed poisonous, but that of others, apparently, is innocuous. South American species of *Sapium* yield a kind of commercial rubber, but the Central American trees have not been exploited for the purpose.

SEBASTIANIA Spreng.

Glabrous trees or shrubs; leaves alternate, stalked, serrulate, with small stipules; flowers minute, green, usually monoecious, without petals, in spikes.

Leaves acute or short-acuminate.....*S. adenophora.*

Leaves abruptly long-cuspidate.....*S. longicuspis.*

Sebastiania adenophora Pax & Hoffm. *Kanchunup* (Yucatan, Maya). Honey Camp, *Lundell* 434; Yucatan. A glabrous shrub or small tree; leaves ovate to oblong, short-petiolate, acuminate, serrulate; flowers green, spicate; fruit a small capsule.

Sebastiania longicuspis Standl. Field Mus. Bot. 11: 134. 1932. *Ridge White Poisonwood.* Type from Eldorado, *Schipp* 1018; Vaca, *D. Stevenson* (Yale 11985); Guatemala. A tree 13 meters high, the trunk 25 cm. in diameter; leaves small, on short slender petioles, oblong or oblanceolate-oblong, obtuse at the base, inconspicuously serrulate; fruit large, drupe-like, globose. Wood light brown, moderately heavy, tough and strong, fine-textured, easy to work, finishes very smoothly, is not resistant to decay; parenchyma in fine, concentric lines of same width as the rays but more widely spaced; timber not utilized, but probably suitable for tool handles.

TRAGIA L.

Tragia yucatanensis Millsp. *Popox* (Yucatan, Maya). Machaca, *Schipp* 1211. A species confined to the Yucatan Peninsula.

BUXACEAE. Box Family

BUXUS L.

Only one species of the genus is known from Central America.

Buxus Bartlettii Standl. Field Mus. Bot. 11: 134. 1932. Type from river bluffs, El Cayo, *Bartlett* 11437; Esperanza Road, *Schipp* S724. An almost glabrous shrub or small tree; leaves opposite, without stipules, narrowly lance-oblong, small, acuminate, with spine-like tips, entire, thick; flowers small, greenish, in dense axillary few-flowered inflorescences, the flowers mostly staminate, one in each cluster usually pistillate; fruit a 3-celled capsule.

ANACARDIACEAE. Cashew Family

Trees or shrubs; leaves alternate, simple or pinnate, without stipules; flowers small, whitish or greenish, panicled; calyx 3–7-cleft; petals 3–7; stamens as many or twice as many as the petals; fruit superior, usually fleshy and containing a single seed.

Leaves simple, entire.

Stamens 1–5; leaves long-acuminate.....*Mangifera.*

Stamens 8–10; leaves rounded at the apex.....*Anacardium.*

Leaves pinnate.

Ovary 5-celled; fruit edible.....*Spondias.*

Ovary 1-celled; fruit not edible.

Calyx much enlarged and persistent in fruit.....*Astronium.*

Calyx not enlarging.

Leaflets 3–7, long-stalked.....*Metopium.*

Leaflets 11–17, almost sessile.....*Mosquitoxylum.*

ANACARDIUM L.

Anacardium occidentale L. *Cashew. Marañón* (Central America generally). Common in open forest or thickets; widely distributed in tropical America. A small or medium-sized, almost glabrous tree; leaves obovate, short-stalked, rounded at the apex; flowers reddish or purplish, in large panicles. The tree is planted commonly for its fruit, of curious structure. The fruit consists of a gray kidney-shaped nut borne at the apex of what appears to be a fleshy fruit but is really an enlarged hypocarp. The latter resembles somewhat a bullnose pepper, red or yellow, with abundant juicy flesh. It is a favorite fruit in Central America, although the peculiar flavor does not appeal to all palates. The outer coat of the nut contains an acrid oil, cardol, that produces blisters on the skin, but the nut itself, when roasted, is very good to eat. Large quantities of the roasted nuts now are consumed in the United States. The oil obtained from the seeds is used sometimes to preserve articles of wood and leather from the attacks of termites and other insects, and a gum that exudes from the bark may be utilized for the same purpose. Wood grayish, pinkish or brownish with rather high luster; moderately hard and strong, medium-textured, easy to work, is not very resistant to decay.

ASTRONIUM Jacq.

Astronium graveolens Jacq. *Glassy Wood. Palo Mulato. Ciruelillo* (Honduras). *Kulimche* (Yucatan, Maya). Crique Negra,

N. S. Stevenson, and elsewhere; Central and South America. A large forest tree with small narrow buttresses; leaves pinnate, the numerous leaflets oblong or ovate, almost glabrous, stalked, toothed, with long tapering tips; flowers small, in large panicles; sepals becoming much enlarged and thin and surrounding the small dry oblong fruit. Wood reddish, sometimes plain, but more often richly striped with black; hard, heavy, fine-textured, durable, easy to work, and suited for fine furniture and articles of turnery; similar to the Gonçalo Alves of Brazil. (See *T. of T. A.*, pp. 386–390.)

MANGIFERA L.

Mangifera indica L. *Mango.* Cultivated and probably also becoming naturalized; native of the East Indies. The favorite fruit of Central America generally.

METOPIUM P. Br.

Metopium Brownei (Jacq.) Urban. *Black Poison Wood. Honduras Walnut. Chechem* (Maya). Frequent in thickets and open forest; southern Mexico and Greater Antilles. A shrub or a medium-sized tree; leaflets 3–7, obovate or rounded, entire, glabrous, long-stalked; flowers small, whitish, in large axillary panicles; fruit a compressed purple drupe 8 mm. long. The tree is highly poisonous, at least to some persons, causing intense itching, followed by blistering and swelling of the parts affected. Heartwood of various shades of brown with a greenish tinge and golden luster; hard and heavy, rather fine-textured, often wavy-grained, not easy to work but finishes very smoothly and takes a high polish; timber highly esteemed locally for furniture. (See *Trop. Woods* 18: 28.)

MOSQUITOXYLUM Krug & Urban

Mosquitoxylum jamaicense Krug & Urban. *Bastard Mahogany, Ridge Redwood* (?), *Wild Mahogany, Chichimeca. Nictaa* (Maya). Frequent in forest; Chiapas to Panama; Jamaica. A large tree, reported also as a shrub; leaflets 11–17, obovate to oblong, entire, rounded or obtuse at the apex, unequal at the base, leathery, minutely appressed-hairy beneath or almost glabrous; flowers small, in large axillary panicles; fruits red, somewhat compressed, 8 mm. long. Called Mosquito Wood in Jamaica. According to C. S. Brown, this is a tall straight slender tree up to 24 meters high, with a trunk as much as a meter in diameter. Wood pale reddish brown tinged with yellow; hard, heavy, strong, rather fine-textured, somewhat cross-grained, finishes very smoothly, is moderately durable.

SPONDIAS L.

Shrubs or small trees; leaves deciduous; leaflets numerous, unequal at the base; flowers small, paniced; fruit a fleshy juicy drupe with a large, usually 5-celled, rough stone. Wood nearly white when fresh, but subject to blue stain; light in weight, but firm and tenacious; suitable for box boards if kiln-dried; perishable in the soil.

Panicles lateral on old wood, small; leaflets acute to rounded at the apex, mostly 2–5 cm. long.....*S. purpurea.*

Panicles terminal, large; leaflets abruptly obtuse-acuminate, mostly 6–10 cm. long.....*S. Mombin.*

Spondias Mombin L. *Jobo. Hog Plum. Kanabal* (Yucatan, Maya). Frequent in thickets or open forest; widely distributed in tropical America. A medium-sized tree with pale, nearly smooth bark; leaflets almost glabrous, stalked, entire or toothed; flowers greenish; fruit yellow, plum-like. Often planted, like the following species, for living fence posts. The fruits are edible, but inferior in flavor.

Spondias purpurea L. *Hog Plum. Ciruela. Abal, Chiabal* (Yucatan, Maya). Frequent in thickets; widely distributed in tropical America. A shrub or small tree, often more or less sprawling, with few thick branches; flowers red or purplish; fruits usually red or purple. The leaves have a strong acid flavor. The fruits resemble small plums, and have a somewhat similar taste. Some of the best varieties are decidedly good to eat.

AQUIFOLIACEAE. Holly Family

ILEX L. Holly

Ilex panamensis Standl. *Cassada, Dogwood* (Gentle). Occasional in forest or thickets, sometimes in mangrove swamps; southward to Honduras and Panama. A glabrous tree 6–9 meters high, the trunk 10 cm. in diameter; leaves leathery, alternate, without stipules, short-petiolate, oblong or oblanceolate-oblong, obtuse or abruptly short-pointed; flowers small, whitish, solitary or clustered in the leaf axils; fruit a small globose black berry. Called Garlic Wood in Panama. Wood grayish or grayish brown, similar in appearance and properties to Beech (*Fagus*).

CYRILLACEAE. Cyrilla Family

CYRILLA L.

Cyrilla racemiflora L. Río Privación, El Cayo District, *Bartlett* 11788; southern Mexico, southern United States, West Indies,

and northern South America. A shrub 3–3.5 meters high; leaves alternate, leathery, oblong-oblanceolate, obtuse or acute, short-stalked, entire, glabrous; flowers white or pinkish, in lateral racemes; sepals 5; petals 5, acute, 3 mm. long; stamens 5; fruit a small 2-celled capsule. The genus is unknown elsewhere in Central America.

CELASTRACEAE. Bittersweet Family

Trees or shrubs; leaves opposite or alternate, entire or toothed; stipules minute and caducous or none; flowers small, perfect, fascicled or in cymes; calyx 4–5-lobed; petals 4–5, small; stamens 4–5, the anthers 2-celled; ovary 2–5-celled; fruit a capsule or berry.

Fruit with broad longitudinal wings..... *Wimmeria.*

Fruit not winged.

Flowers clustered in the leaf axils; fruit a capsule..... *Maytenus.*

Flowers in cymes; fruit a berry..... *Rhacoma.*

MAYTENUS Molina

Trees or shrubs; leaves alternate, persistent, entire or toothed, the stipules minute and deciduous; flowers polygamous; calyx 5-parted; petals 5; fruit a coriaceous capsule with 1–3 cells, the seed surrounded by a fleshy aril.

Leaves obtuse or rounded at the apex..... *M. belizensis.*

Leaves acute or acuminate..... *M. longipes.*

Maytenus belizensis Standl. Carnegie Inst. Wash. Publ. 461: 69. 1935. Type from Jacinto Hills, in forest, *Schipp* S617. A tree of 10 meters, the trunk 20 cm. in diameter; leaves oblong, leathery, entire or nearly so, the lateral nerves obsolete; capsules 6–9 mm. long.

Maytenus longipes Briq. Apparently frequent in forests; ranging to Colombia and the Guianas. A shrub or tree, as much as 9 meters high, with trunk diameter of 20 cm.; leaves short-petiolate, glabrous, obscurely toothed; flowers minute, creamy yellow; fruit orange-colored.

RHACOMA L.

Shrubs or small trees; leaves chiefly opposite, some of them at times alternate, entire or toothed, the stipules small; flowers small, in cymes, axillary; ovary 2–4-celled; fruit a drupe, with a single cell.

Calyx densely short-pilose with spreading hairs; veins of the leaves very prominent..... *R. Gaumeri.*

Calyx minutely puberulent; veins of the leaves inconspicuous.
R. eucymosa.

Rhacoma eucymosa (Loes. & Pitt.) Standl. *Myginda eucymosa* Loes. & Pitt. *Carbón, Limoncillo.* Frequent in forest; southward to Panama. A glabrous shrub or tree, sometimes 7.5 meters high, with a trunk 8 cm. in diameter, the bark dark olive-brown, smooth, but flaking off; leaves opposite, short-petioled, ovate to oblong, obscurely serrulate; flowers minute, whitish, in small stalked axillary cymes; petals and stamens each 4; fruit a red or black plum-like drupe 1–2 cm. long.

Rhacoma Gaumeri (Loes.) Standl., comb. nov. *Myginda Gaumeri* Loes. Honey Camp, *Lundell* 650; El Cayo, *Chanek* 154; Campeche; Yucatan. An almost glabrous shrub, 5 meters high or less; leaves oblong to elliptic, finely serrulate, leathery; flowers dark red; drupe obovoid, about 1 cm. long.

WIMMERIA Schlecht. & Cham.

Wimmeria concolor Schlecht. & Cham. Temash River, *Schipp* 1296; Petén and Mexico. A tree of 9 meters, the trunk 15 cm. in diameter; leaves lanceolate to ovate, acute or acuminate, crenate-serrate or almost entire, lustrous on the upper surface; flowers minute, in axillary cymes; fruit 1.5–2.5 cm. long, the broad thin wings often tinged with red.

HIPPOCRATEACEAE. Hippocratea Family

Woody vines; leaves opposite, entire or inconspicuously toothed, the stipules minute, deciduous; flowers small, perfect, greenish, in axillary cymes; calyx 5-parted; petals usually 5; stamens normally 3, inserted on a well-developed disk; ovary 3-celled, with a simple or 3-lobed stigma.

Fruit globose, baccate; seeds not winged ..... *Salacia.*
Fruit vertically depressed and deeply 3-lobed, dry; seeds broadly winged ..... *Hippocratea.*

HIPPOCRATEA L.

Leaves persistent, more or less leathery, short-petiolate; flowers small, greenish, in lax or dense cymes or panicles; capsule large, flat, strongly compressed vertically, 3-lobed almost to the base, the lobes splitting open along the middle. The curious fruits are altogether unlike those of any other Central American plant.

Panicles glabrous..... *H. celastroides.*
Panicles puberulent or tomentose.
Petals glabrous; leaves obscurely crenulate..... *H. subintegra.*
Petals tomentose; leaves conspicuously crenate.. *H. yucatanensis.*

Hippocratea celastroides HBK. *Tulubalam* (Yucatan, Maya). Sittee River and elsewhere; Mexico and northern Central America, at least to Guatemala. A small or large, woody vine; leaves mostly oblong, bright green, entire or crenulate, glabrous, acute; flowers greenish yellow or whitish.

Hippocratea subintegra Blake, Contr. Gray Herb. 52: 73. 1917. Type collected in pine ridge thickets, Manatee Lagoon, *Peck* 456. Reported, perhaps incorrectly, as a small tree; leaves obovate, cuneate at the base, glabrous; flowers 5 mm. broad.

Hippocratea yucatanensis Standl. *Tietie. Salbeets* (Yucatan, Maya). Mullins River Road and elsewhere; Yucatan. A large woody vine; leaves elliptic-oval to oblong-elliptic, obtuse, sometimes sparsely pubescent beneath along the midrib; petals 4 mm. long.

SALACIA L.

Salacia belizensis Standl. Field Mus. Bot. 8: 19. 1930. Type from Mullins River Road, in jungle, *Schipp* 128; Sittee River; El Cayo District; Honduras (?). A large vine as much as 9 meters long, the trunk 5–10 cm. in diameter; leaves elliptic-oblong, acuminate, entire or nearly so; flowers fragrant, minute, white or green; fruit hard and woody, globose, 3 cm. in diameter or larger.

ICACINACEAE. Icacina Family

CALATOLA Standl.

The genus consists of three species, one in Mexico, the present one, and another in Costa Rica, Panama, and Colombia.

Calatola laevigata Standl. Collected only by Schipp, Temash River and Camp 32 on the Guatemalan boundary; Mexico. A large or medium-sized tree; leaves alternate, petiolate, oblong, acuminate, entire, glabrous or nearly so; flowers dioecious, the staminate in long slender catkin-like spikes; fruit a very large drupe, the large stone covered with narrow sharp ridges and in its form somewhat suggestive of an English walnut. The wood is white. The fruits of the Costa Rican species are cooked and eaten.

SAPINDACEAE. Soapberry Family

Trees or shrubs, often woody vines, frequently provided with tendrils; leaves alternate or subopposite, petioled, compound or simple, without stipules; flowers small, usually whitish, regular or nearly so, with 4–5 sepals or calyx lobes, 3–5 petals, and 5–10 stamens inserted on a disk; ovary 2–4-celled; fruit dry or fleshy. The woods are of no commercial importance and of little use locally.

Plants climbing, the inflorescence usually provided with tendrils.

Fruit inflated and bladder-like; stems chiefly herbaceous. *Cardiospermum.*

Fruit not bladder-like; stems mostly woody.

Fruit of 3 samaras..... *Serjania.*

Fruit a capsule.

Capsule thin, with 3 broad wings extending from base to apex; leaflets 3..... *Urvillea.*

Capsule thick-walled, not winged or winged toward the apex..... *Paullinia.*

Plants erect, without tendrils.

Leaves simple..... *Dodonaea.*

Leaves compound.

Leaflets 2–4.

Fruit dry, a samara..... *Thouinia.*

Fruit fleshy, not winged.

Leaflets 3, more or less toothed..... *Allophylus.*

Leaflets 2 or 4, entire..... *Talisia.*

Leaflets more than 4, usually much more numerous.

Fruit not opening, globose, with translucent pulp; leaflets entire..... *Sapindus.*

Fruit opening at maturity, dry.

Sepals distinct; leaves more or less toothed..... *Cupania.*

Sepals united; leaflets entire..... *Matayba.*

ALLOPHYLUS L.

Shrubs or trees; leaves alternate, with 3 leaflets; flowers small, white, in simple or panicled racemes; sepals and petals each 4; stamens 8; ovary usually 2-celled; fruit a small 1-seeded drupe.

Leaflets glabrous beneath or nearly so; racemes simple. *A. longeracemosus.*

Leaflets densely pubescent beneath; racemes usually branched.

Leaflets sessile or nearly so; pubescence of the young branches of spreading hairs; fruit sparsely pubescent.....*A. Cominia.*

Leaflets conspicuously stalked; pubescence of the branches mostly appressed; fruit glabrous.....*A. Kinlochii.*

Allophylus Cominia (L.) Swartz. *Cherry. Huesillo. Bikbach, Ixbahach* (Maya). *Palo de Caja* (Yucatan). Common in thickets or open forest; Yucatan, Greater Antilles. A shrub or small tree, sometimes 6 meters high, densely and softly pubescent throughout; leaflets elliptic or obovate, acute or acuminate, serrulate; fruit red, 4 mm. long. The fruit is reported to be edible.

Allophylus Kinlochii Standl. Trop. Woods 32: 16. 1932. Type from Temash River, 14 miles from the bar, levee forest, common, *Kinloch* 43. A tree 9 meters high, the trunk 20 cm. in diameter; leaflets small, oblong or elliptic-oblong, long-acuminate, glabrate above, softly pubescent beneath, coarsely serrate; fruit red.

Allophylus longeracemosus Standl. Trop. Woods 16: 39. 1928. *Bastard Axemaster.* Type collected between Columbia and Toledo, *Donald & Balderamos* 10 (Yale 12304); Crique Negra, *Balderamos* 5 (Yale 14882). A small tree; leaflets stalked, oblanceolate-oblong to narrowly obovate, acute or acuminate, wavy-margined or almost entire.

CARDIOSPERMUM L. Balloon Vine

Cardiospermum grandiflorum Swartz. A slender vine, nearly or wholly herbaceous.

CUPANIA L.

Shrubs or trees; leaves alternate, large, pinnate; flowers small, whitish, in racemes or panicles; sepals and petals each 5; stamens 7; fruit a 2–4-lobed capsule, coriaceous or somewhat fleshy; seeds with a conspicuous aril.

Leaflets glabrous or nearly so.

Leaflets conspicuously dentate, often auricled at the base, acute. *C. auriculata.*

Leaflets entire or nearly so, obtuse.

Capsules densely tomentose.....*C. triquetra.*

Capsules glabrous.....*C. macrophylla.*

Leaflets densely and softly pubescent beneath, rounded or obtuse at the apex.

Fruit densely hairy; leaflets very narrowly oblong, long-attenuate to the base.....*C. guatemalensis.*

Fruit glabrous or nearly so; leaflets oblong, rounded to acute at the base.....*C. belizensis.*

Cupania auriculata Standl. Field Mus. Bot. 8: 20. 1930. Type from Stann Creek Railway, Six Mile, broken pine ridge jungle, *Schipp* 267; Temash River, *Kinloch* 52. A tree 4.5–9 meters high, the trunk 5–10 cm. in diameter; leaves very large, the leaflets oblong or broadly oblong, rounded at the base and often auricled, toothed toward the apex or almost entire; panicles very large.

Cupania belizensis Standl. Trop. Woods 16: 40. 1928. *Grande Betty.* Type from Cohune ridge, Vaca, western Cayo District, *D. Stevenson* 15 (Yale 11995); Corozal District, *Gentle* 362, 367; Petén. A shrub or tree, the trunk as much as 25 cm. in diameter; leaves large, the leaflets glabrate on the upper surface; panicles mostly shorter than the leaves; capsule short-stalked.

Cupania guatemalensis Radlk. *Red Copal, Grande Betty. Sacpom* (Maya). Occasional in thickets; southward to Costa Rica. A shrub or small tree with rather small leaves; panicles shorter than the leaves.

Cupania macrophylla A. Rich. Forest Home, Toledo, *Schipp* 1069, 1095; Guatemala, Mexico, Cuba. A tree of 10 meters, the trunk 25 cm. in diameter; leaflets 4 or 6, large, oblong or obovate-oblong; racemes puberulent, the flowers small, cream-colored; capsule 1.5 cm. long.

Cupania triquetra A. Rich. *Grande Betty.* Stann Creek Valley, *Pelly;* West Indies. A tree of 10 meters; leaflets 4–8, large, oblong; capsule conspicuously stipitate, densely brownish-tomentose.

DODONAEA Jacq.

Dodonaea viscosa Jacq. Occasional, especially in coastal thickets; widely distributed in tropical regions of the earth. A viscid shrub 2–3 meters high; leaves oblong-oblanceolate, obtuse, entire; flowers yellowish, in small lateral clusters; petals none; fruit a narrow capsule with 3 broad thin vertical wings, 1.5–2.5 cm. broad.

MATAYBA Aubl.

Matayba oppositifolia (A. Rich.) Britton. *Mabehu. Boy Job.* Freshwater Creek, Honey Camp, All Pines, in forest; Honduras, Cuba, Puerto Rico. A tree 7–12 meters high, the trunk 7–20 cm.

in diameter; leaves chiefly opposite, pinnate, the leaflets oblong to obovate or oblanceolate, obtuse to acuminate, glabrous, entire; flowers small, greenish, in large panicles; capsule 2–3-lobed, stalked, 1 cm. long.

PAULLINIA L.

Large or small, woody vines; leaves compound; flowers small, white, the inflorescences usually provided with tendrils; fruit a terete or 3-winged capsule, often tinged with red; seeds 1–3, black, subtended by a fleshy white aril.

Leaves biternate, the lowest pinnae composed of 3 leaflets.

Capsule winged.....*P. fuscescens.*

Capsule not winged.....*P. costaricensis.*

Leaves pinnate, the lowest leaflets simple, sometimes lobed.

Leaflets obtuse or rounded at the apex, densely pubescent. *P. tomentosa.*

Leaflets acuminate, glabrous or nearly so.

Rachis of the leaf broadly winged.....*P. pinnata.*

Rachis of the leaf not or very obscurely winged.....*P. costata.*

Paullinia costaricensis Radlk. *Pate* (Honduras). Frequent in thickets; southern Mexico to Costa Rica. A woody vine, sometimes 11 meters long, with a trunk 5 cm. in diameter; leaflets 9, elliptic or rhombic, coarsely toothed, pubescent or almost glabrous; fruit globose or obovoid, nearly 1 cm. long, orange-red, minutely pubescent.

Paullinia costata Cham. & Schlecht. Occasional in thickets; Mexico to Costa Rica. A large woody vine, as much as 15 meters long, nearly glabrous; leaflets 5, oblong to ovate, entire or nearly so; fruit bright red, globose, 2 cm. or more in diameter.

Paullinia fuscescens HBK. *Pate* (Honduras). *Kexak* (Yucatan, Maya). Corozal District; widely distributed in tropical America. A large or small vine; leaflets 9, oblong to rhombic, acute, coarsely toothed, softly pubescent; fruit dull red, broadly 3-winged.

Paullinia pinnata L. *Tietie, Fish Poison. Macalte ik* (Maya). *Pate* (Honduras). *Salatxiu* (Petén, Maya). Frequent in forest or thickets; widely distributed in tropical America. A large vine, glabrous or nearly so; leaflets 5, oblong to ovate, thick and leathery, coarsely toothed; fruit large, obovoid, brown or red, terete. This, like other species of *Paullinia* and *Serjania*, is used rather commonly in Central America as a barbasco or fish poison. The stems and

leaves are macerated and thrown into ponds or quiet streams, whereupon after a short time the fish become stupefied and float on the surface of the water, so that they may be collected easily. The poisonous properties of the plants are not deleterious to the fish as human food, and it is stated that if the fish are left in the water, they recover after a while and swim away. From the seeds of a Brazilian *Paullinia* there is prepared a beverage resembling coffee. Its seeds are an official drug of the United States Pharmacopoeia, under the name Guarana, being administered as a remedy for chronic diarrhea.

Paullinia tomentosa Jacq. El Cayo; Mexico to Honduras. Leaflets 5, ovate to broadly elliptic, coarsely crenate, tomentose beneath; capsule subglobose, 1–1.5 cm. long, red, tomentose.

SAPINDUS L. Soapberry

Sapindus Saponaria L. *Soapseed Tree. Jabón-che* (Spanish and Maya). *Zubul* (Yucatan, Maya). Occasional in thickets; widely distributed in tropical America. A small or medium-sized tree; leaves pinnate, the leaflets 5–17, linear-lanceolate to oblong, acuminate, entire, glabrate; flowers whitish, in large terminal panicles; fruit a 1-seeded globose translucent berry. The pulp of the fruits, when rubbed in water, gives a lather, like soap, and the fruits are sometimes employed as a substitute for soap. Wood yellow or brown, hard, heavy, coarse-textured, not durable when exposed; pores rather large, scattered; parenchyma abundantly developed in tangential bands, suggesting Leguminosae; timber not utilized.

SERJANIA Schumach.

Large or small, woody vines, with tendrils; flowers small, whitish, in short or elongate racemes; fruit consisting of 3 samaras, the samaras dry, winged, 1-seeded, the seed borne in the upper part of the cell, the wing basal. The tough flexible stems of these plants and of the Paullinias often are employed locally as a substitute for rope.

Leaflets 3 ..... *S. yucatanensis.*

Leaflets more than 3.

Leaflets more than 9.

Leaflets obtuse, coarsely crenate, broad ..... *S. adiantoides.*

Leaflets acuminate, entire or nearly so, narrow .... *S. pterarthra.*

Leaflets 9.

Cells of the fruit strongly compressed, glabrate. . *S. mexicana.*
Cells of the fruit not compressed, pubescent.
Leaflets leathery, lanceolate, entire or with a few remote teeth..... *S. atrolineata.*
Leaflets thin, ovate or rhombic-elliptic, coarsely toothed. *S. scatens.*

Serjania adiantoides Radlk. *Bui* (Yucatan, Maya). Honey Camp; Corozal District; Yucatan. A slender vine, the stems hirsute; leaves bipinnate, the leaflets obtuse, crenate, hairy or glabrate.

Serjania atrolineata Sauv. & Wright. *Buiche* (Yucatan, Maya). Big Creek, edge of stream, *Schipp* 71; Central America and West Indies. A large vine, almost glabrous.

Serjania mexicana Willd. Frequent in thickets; of wide distribution in tropical America. A large woody vine; leaflets oblong to ovate, usually acute or acuminate, toothed or almost entire, glabrous or nearly so; fruit 2–2.5 cm. long.

Serjania pterarthra Standl. Little Fall, Belize River, *Lundell* 4050; Campeche. A woody vine with hispid, almost prickly, angled stems; rachis of the leaf broadly winged; fruit glabrous, 1.5 cm. long.

Serjania scatens Radlk. El Cayo District, *Bartlett;* Central America and northern South America. A large vine; fruit about 2 cm. long.

Serjania yucatanensis Standl. Corozal District, *Gentle* 386; Yucatan. Leaflets obtuse or acutish, crenate-serrate or entire, glabrous or nearly so; samaras glabrous.

TALISIA Aubl.

Shrubs or trees; leaves pinnate, with few entire leathery leaflets; flowers small, white, in terminal panicles; fruit drupaceous.

Leaflets 2..... *T. diphylla.*
Leaflets 4..... *T. oliviformis.*

Talisia diphylla Standl. *Uayamcox* (Maya). Freshwater Creek Reserve, in primary intermediate forest, *Castillo* 25; Yucatan. A small or medium-sized tree; leaves short-stalked, some of them often simple, the leaflets oblong or oblanceolate-oblong, obtuse, glabrous; panicles equaling or slightly exceeding the leaves; fruit at first sparsely appressed-hairy but soon glabrate.

Talisia oliviformis (HBK.) Radlk. *Kinep, Canip* (Maya). *Guayo* (Yucatan). *Uayum* (Yucatan, Maya). Honey Camp and

elsewhere; southern Mexico to Colombia. A tree of medium size with dense spreading crown; leaflets oblong to elliptic, obtuse or acute, glabrous, leathery; flowers yellowish white, in short dense panicles; fruit edible, 2.5–3 cm. in diameter and somewhat longer, yellow or brown, with a large stone and thin orange-colored juicy pulp. The tree is planted in Central America for its fruit.

THOUINIA Poit.

Thouinia paucidentata Radlk. *Kanchunup* (Yucatan, Maya). Jacinto Hills, in forest, *Schipp* 1292; Yucatan, Campeche, Petén. A tree of 10 meters, the trunk 25 cm. in diameter; leaflets 3, lanceolate or lance-elliptic, acute or acuminate, remotely serrate; flowers small, whitish, in raceme-like lateral panicles; fruit of 2 or 3 samaras 10–12 mm. long.

URVILLEA HBK.

Urvillea ulmacea HBK. *Puluxtacoc* (Yucatan, Maya). In thickets; Texas to South America. A pubescent woody vine; leaflets 3, ovate, acute, toothed; flowers small, white, in racemes; fruit elliptic, 2–3 cm. long, with 3 thin wings.

RHAMNACEAE. Buckthorn Family

Trees or shrubs; leaves simple, entire or toothed, usually provided with stipules; flowers small and inconspicuous, perfect or of separate sexes; calyx 4–5-lobed; petals 4–5 or none, often clawed; stamens 4–5, opposite the petals; fruit 1–4-celled, capsular or drupaceous. The woods are of little or no commercial value; some of them are among the densest known.

Plants with tendrils; fruit dry, vertically winged..... *Gouania.*

Plants without tendrils; fruit juicy, not winged.

Leaves entire; flowers in clusters in the leaf axils... *Krugiodendron.*

Leaves finely toothed.

Flowers in large panicles; leaves not tomentose beneath. *Sageretia.*

Flowers in clusters in the leaf axils; leaves white-tomentose beneath..... *Zizyphus.*

GOUANIA Jacq.

Large shrubs with long trailing branches, sometimes vines; leaves alternate, short-stalked, ovate or elliptic, acute or acuminate,

shallowly toothed; flowers small, whitish, in long racemes; fruit hard, with 6 narrow or broad, thick wings.

Leaves densely hairy beneath.....*G. polygama.*

Leaves glabrous beneath or hairy only on the nerves...*G. lupuloides.*

Gouania lupuloides (L.) Urban. *Xomak* (Yucatan, Maya). In thickets; widely distributed in tropical America. A slender shrub 3–5 meters high. Called Chewstick in the British West Indies. The twigs yield a copious lather when chewed, and they are often employed for cleaning the teeth. The dried stems of the various species have been exported from tropical America to Europe and the United States for use in the preparation of dentifrices.

Gouania polygama (Jacq.) Urban. *Limpia-dientes* (Honduras). Frequent in thickets; widely distributed in tropical America. A slender shrub 5 meters high or less; fruit 7–9 mm. broad.

KRUGIODENDRON Urban

Krugiodendron ferreum (Vahl) Urban. *Axemaster. Quebracho, Quiebrahacha. Chimtoc* (Yucatan, Maya). Occasional in thickets or open forest; Yucatan, West Indies. A tree 10 meters high; leaves subopposite, small, stalked, ovate or oval, obtuse or emarginate at the apex, almost glabrous; fruit a black drupe 5–8 mm. long. Wood orange-brown to dark brown, often more or less streaked; appears wavy; exceedingly hard and heavy, horn-like, very fine-textured, finishes smoothly, appears durable. (See *Trop. Woods* 8: 13–15.)

SAGERETIA Brongn.

Sageretia elegans (HBK.) Brongn. *Cherry.* A slender shrub 2–4.5 meters high, often with recurved branches; leaves subopposite, short-stalked, lanceolate to ovate-elliptic, tomentulose beneath when young but soon glabrate; panicles broad, tomentose; drupe 6–8 mm. in diameter, containing 3 nutlets.

ZIZYPHUS Adans.

Zizyphus Jujuba Lam. Corozal, *Lundell* 4985, doubtless in cultivation; native of the Old World tropics. A spiny shrub with 3-nerved leaves and large orange-red fruits. The plant is grown commonly in some regions of the tropics for its edible fruits.

VITACEAE. Grape Family

Woody vines with tendrils; leaves alternate, simple or compound, petiolate; flowers very small, in cymes or panicles; calyx

4–5-toothed; petals 4–5, distinct or coherent; stamens 4–5, opposite the petals; fruit a berry containing few seeds.

Petals distinct; leaves not tomentose beneath.....*Cissus.*

Petals united to form a cap; leaves with a tomentum of loose cobwebby hairs on the lower surface.....*Vitis.*

CISSUS L.

Small or large vines with green or red flowers; fruit not edible.

Leaves compound, with 3 leaflets.....*C. rhombifolia.*

Leaves simple.

Leaves sparsely or densely pubescent, all of them similar in shape. *C. sicyoides.*

Leaves glabrous, often very variable in outline on the same branch.

Larger leaves conspicuously 3–5-lobed.....*C. gossypiifolia.*

Larger leaves not lobed.....*C. biformifolia.*

Cissus biformifolia Standl. *Tietie.* Saratoon, *N. S. Stevenson;* Panama. A large vine, almost wholly glabrous; larger leaves broadly oblong-ovate, cordate or truncate at the base, entire or nearly so, the smaller ones lance-oblong.

Cissus gossypiifolia Standl. Field Mus. Bot. 8: 23. 1930. Type from Honey Camp, *Lundell* 25; represented by several collections from Honey Camp and Corozal District. Lobes of the larger leaves acute or acuminate, entire; smaller leaves varying from rounded-ovate to oblong; flowers dark red.

Cissus rhombifolia Vahl. Frequent in thickets; a species of wide distribution in the American tropics. A large woody vine; leaflets ovate, rhombic, or elliptic, acute, serrate, pubescent; flowers green or red; berries small, black.

Cissus sicyoides L. *Picamano* (Honduras). *Sanalotodo* (Petén). Frequent in thickets; widely distributed in tropical America. A large vine with long pendent flexible cord-like aerial roots; leaves grayish, sharply and closely toothed; flowers green. The tough flexible stems are used as a substitute for twine and rope. The acrid sap is reported to cause blisters when it comes into contact with the skin. The inflorescences frequently are distorted by a smut in such a manner that they suggest a distinct plant parasitic upon the vine.

VITIS L. Grape

Vitis tiliifolia Humb. & Bonpl. *Water Tietie, Water Wise. Bejuco de Agua, Uva.* Occasional in forest and thickets; widely

distributed in tropical America. A large woody vine, the stems sometimes 15 cm. thick; leaves long-stalked, most of them shallowly 3-lobed, sharply toothed; flowers greenish, sweet-scented; fruits purplish black, 6–8 mm. in diameter. The fruits are too small and sour to be eaten, but in certain regions they are made into vinegar. The name water vine alludes to the fact that from a section of the stem there may be obtained a substantial quantity of clear flavorless sap that makes a good substitute for water when the latter is lacking.

TILIACEAE. Linden Family

Herbs, shrubs, or trees, the pubescence most often of branched hairs; leaves alternate, simple, stalked, sometimes lobed, with stipules; flowers small or large and showy, with 5 free or coherent sepals, normally 5 petals, and usually numerous stamens; fruit a capsule or berry, often bur-like.—As here treated, the family includes the plants sometimes separated as a distinct family, the Elaeocarpaceae.

Fruit a berry. Petals large, white or pink.....*Muntingia.*
Fruit dry.
Fruit covered with spines or bristles.
Fruit large, more than 1 cm. long, opening by 4 valves..*Sloanea.*
Fruit small, less than 1 cm. long, not opening.
Fruit compressed, with a row of long bristles along the margin.....*Heliocarpus.*
Fruit globose, covered on all sides with hard spines. *Triumfetta.*
Fruit without either spines or bristles.
Fruit linear, elongate. Herbs or low shrubs.....*Corchorus.*
Fruit not linear; trees.
Sepals united to form a cup-like calyx.....*Christiania.*
Sepals distinct or nearly so.
Fruit compressed, 2-celled, thin-walled; petals violet. *Belotia.*
Fruit not compressed, 5-celled; petals white or whitish. *Luehea.*

BELOTIA A. Rich.

Belotia Campbellii Sprague, Kew Bull. 277. 1921. *Moho, Narrowleaf Moho. Capulín* (Honduras). Frequent in forest, the type from Seven Hills Estate, *Campbell* 75; southern Mexico to

Honduras. A tree as much as 15 meters high, with trunk diameter of 30 cm.; leaves oblong or ovate, short-stalked, long-acuminate, 3-nerved, finely toothed or almost entire, with stellate pubescence beneath; flowers in dense cymes, 6 mm. long; petals violet, the sepals pink; pods compressed, 2-celled, densely pubescent, rounded, containing numerous hairy seeds. A beautiful and showy tree when covered with its abundant blossoms. Wood white or pale brownish, very light and soft, medium-textured, perishable; not utilized.

CHRISTIANIA DC.

Christiania africana DC. *Palo Mulato.* Orange Walk District, *Winzerling;* Guianas and northern Brazil; central Africa. A tree with abundant stellate pubescence; leaves large, long-stalked, rounded-ovate, deeply cordate at the base, entire; flowers small, yellowish, in panicled cymes; fruit an obovoid tomentose capsule 1 cm. long. This tree is one of the most extraordinary members of the forest flora of British Honduras, because of its curious distribution.

CORCHORUS L.

Corchorus olitorius L. is listed for British Honduras by Sprague and Riley, but apparently it exists only in cultivation. The jute of commerce is obtained from the bark fiber of two Old World species of this genus.

Corchorus siliquosus L. Plants herbaceous or becoming somewhat shrubby and a meter high.

HELIOCARPUS L.

Small or medium-sized trees; leaves mostly large and thin, long-stalked, finely toothed, usually with stellate pubescence; flowers very small, greenish or yellowish, in large open panicles; fruit elliptic, 3–5 mm. long, hard, the margin with a row of long slender hairy bristles. Wood white, very light and soft, spongy and fibrous, perishable; not utilized.

Leaves finely but usually densely stellate-pubescent beneath; calyx stellate-pubescent..... *H. Donnell-Smithii.*

Leaves and calyces glabrous or nearly so..... *H. mexicanus.*

Heliocarpus Donnell-Smithii Rose. *Broadleaf Moho. Majao* (Honduras). Occasional in thickets or forest; southern Mexico to Nicaragua. A tree 6–12 meters high, with smooth, pale or brownish bark, the crown rounded; leaves broad, often cordate at the base; fruits green or reddish.

Heliocarpus mexicanus (Turcz.) Sprague. *Broadleaf Moho.* Occasional in forest; Mexico to Guatemala. A tree 13 meters high, with trunk diameter of 25 cm.; flowers reddish; leaves mostly ovate or rounded-ovate and obtuse or rounded at the base. The tough bark is sometimes employed for making cordage.

LUEHEA Willd.

Small or large trees; leaves short-petioled, oblong to elliptic, 3-nerved; flowers large, white, in dense cymes; fruit a hard woody 5-celled capsule. Wood white to pinkish brown, with little luster; rather light in weight but firm and strong, medium-textured, easy to work, not resistant to decay; suitable for box boards, veneers for general utility, and lumber for interior construction.

Leaves covered beneath with a close brown tomentum, finely serrate; calyx 1 cm. long; fruit 2–2.5 cm. long, deeply lobed .*L. Seemannii.*

Leaves whitish-tomentose beneath, with brown nerves, usually coarsely serrate; calyx 2.5–3 cm. long; fruit 4 cm. long, terete. *L. speciosa.*

Luehea Seemannii Triana & Planch. *Mapola, Caulote, Tapasquit. Guácimo* (Honduras). Frequent in lowland forest; southward to Panama. A very large tree, often 15 meters tall or much larger; leaves green and smooth on the upper surface; petals greenish white. In some parts of Central America this tree attains an enormous size, not inferior to that of any other tree of the region.

Luehea speciosa Willd. *L. platypetala* A. Rich. *Caulote. Kazcat* (Maya). Frequent in forest or thickets; widely distributed in tropical America. A medium-sized or sometimes a large tree, reported to be at times 30 meters high or more, with trunk diameter of a meter; leaves abruptly narrow-acuminate. The large, pure white flowers are borne in such abundance as to make the tree a striking and showy one during the flowering period.

MUNTINGIA L.

Muntingia Calabura L. *Capulín.* Frequent in thickets; widely distributed in tropical America. A small tree, the pubescence of branched hairs; leaves almost sessile, lance-oblong, very unequal at the base, 3-nerved, acuminate, toothed, whitish beneath; flowers solitary in the leaf axils on long stalks; petals white or pinkish, delicate, 1 cm. long; fruit a red or yellowish, globose berry 1 cm. broad, containing many small seeds. The bark contains a tough fiber that has been employed in some regions for making rope. The fruit is

edible but so intensely sweet as to be rather unpleasant. Wood pale brown, light and soft, fibrous, tenacious, medium-textured, straight-grained, not durable; not utilized.

SLOANEA L.

Small or large trees with rather large or very large, petioled leaves; flowers small, whitish, in few-flowered, axillary or lateral racemes, with numerous stamens; fruit a hard or woody capsule, usually covered with bristles.

Leaves mostly 8–18 cm. wide, obtuse or rounded at the base. *S. eriostemon.*

Leaves mostly 4–7 cm. wide, acute at the base..... *S. Schippii.*

Sloanea eriostemon Sprague & Riley, Kew Bull. 19. 1924. *Wild Atta.* Type, *Peck* 400, without locality; Middlesex; Río Grande. A tree about 10 meters high, the trunk 15–25 cm. in diameter; leaves short-stalked, elliptic-obovate, obtuse, almost entire; fruit a hard woody capsule, opening by 4 valves, covered with very long, stiff, spine-like bristles. Wood pale reddish brown, hard, heavy, tough, strong, fine-textured, irregularly grained, not highly durable; not utilized.

Sloanea Schippii Standl. Carnegie Inst. Wash. Publ. 461: 70. 1935. Type from Río Grande, *Schipp* 1163; Camp 36, Guatemalan boundary, *Schipp* 1245. A tree of 10–12 meters, the trunk 15–20 cm. in diameter; leaves short-stalked, lance-oblong, long-acuminate, sinuate, almost glabrous; capsules 10–13 mm. long.

TRIUMFETTA L.

Shrubs; leaves long-petioled, usually broad, toothed, thin, with stellate pubescence; flowers small or large, axillary or opposite the leaves; sepals appendaged at the apex; fruit a small hard indehiscent bur covered with stiff spines.

Flowers large, the sepals 2–3 cm. long..... *T. speciosa.*

Flowers small, less than 1 cm. long.

Petals none..... *T. Lappula.*

Petals present.

Spines of the fruit glabrous..... *T. Bartramia.*

Spines of the fruit retrorsely barbed..... *T. dumetorum.*

Triumfetta Bartramia L. Stann Creek, open places, *Schipp* 833; West Indies, South America, Old World tropics. A shrub a

meter high, with broad, more or less 3-lobed leaves, and minute yellow flowers. Perhaps introduced here, since the species has not been found elsewhere on the continent, so far as I know.

Triumfetta dumetorum Schlecht. *Ochmul* (Yucatan, Maya). *Cadillo* (Yucatan). El Cayo, *Bartlett* 11481; Mexico and Guatemala. A slender shrub; pubescence of the upper leaf surface of simple hairs. The burs of this and other species adhere tenaciously to clothing by their hooked spines.

Triumfetta Lappula L. *Bur. Mozote* (Honduras). Frequent in thickets; generally distributed in tropical America. A shrub 1–2 meters high; leaves finely stellate-pubescent; burs 6 mm. in diameter. The mucilaginous sap has been utilized for clarifying sugar sirup.

Triumfetta speciosa Seem. Little Mountain, El Cayo District, *Bartlett* 11880; Mexico to Panama. A tall shrub, the large flowers vermilion and yellow, showy; burs with short thick spines.

MALVACEAE. Mallow Family

Herbs, shrubs, or small trees, the pubescence most often of branched hairs; leaves alternate, simple, often lobed, with stipules; flowers small or large, with 5 more or less united sepals, 5 petals, and numerous stamens united to form a column; fruit usually dry and composed of several few-seeded carpels arranged like the sections of an orange, sometimes a capsule. The plants usually have tough bark and mucilaginous sap. The genera and species have not been keyed, since the British Honduras plants of the family, unless otherwise indicated, are herbs.

ABUTILON Adans.

Abutilon hirtum (Lam.) Sweet.

ANODA Cav.

Anoda cristata (L.) Schlecht. *Amapolita* (Yucatan).

GAYOIDES Small

Gayoides crispum (L.) Small. El Cayo, *Bartlett* 12951.

GOSSYPIUM L. Cotton

Gossypium mexicanum Todaro. *Cotton. Algodón. Taman* (Maya). Occasional in thickets or about dwellings; perhaps native and also cultivated; Mexico and Central America. A coarse herb,

or often somewhat shrubby. It is probable that this species of cotton was cultivated in the region in ancient times.

HIBISCUS L.

Hibiscus Abelmoschus L. *Algalia* (Honduras). Native of the East Indies.

Hibiscus bifurcatus Cav.

Hibiscus cannabinus L. Jones Bank, Belize River, *Lundell* 4148; introduced from the Old World.

Hibiscus costatus A. Rich.

Hibiscus diversifolius Jacq. *Sicitah.* Toledo District, *N. S. Stevenson.*

Hibiscus esculentus L. *Okra. Quimbombó* (Yucatan). Cultivated for its edible pods; native of Africa.

Hibiscus furcellatus Desr.

Hibiscus Rosa-sinensis L. *Chinese Hibiscus.* In cultivation. An ornamental shrub, native of China.

Hibiscus Sabdariffa L. *Roselle, Sorrel. Rosa de Jamaica* (Honduras). Cultivated for the fleshy calyces, which are employed in the preparation of cooling beverages, jam, and jelly.

Hibiscus sororius L. f. El Cayo District, *Chanek* 50.

Hibiscus tiliaceus L. *Paritium tiliaceum* Juss.; *P. elatum* Don. *Mahoe, Blue Moho. Majao* (Honduras). *Xholol* (Yucatan, Maya). Coastal thickets, often in swamps; widely distributed in tropical America. A shrub or small tree; leaves broadly rounded, abruptly pointed, almost entire, green above, covered beneath with a whitish felt; flowers yellow, 5–7 cm. long. The tough bark fiber has been used extensively in some regions for making rope. Heartwood of a purplish color, somewhat variegated; luster silky; light and soft, not firm and tenacious, easy to work, fairly durable; not utilized because of the scarcity of trees of sufficient size for timber.

MALACHRA L.

Malachra alceifolia Jacq. *Wild Okra. Malva.*

Malachra capitata L. *Malva* (Yucatan). *Macmuch* (Yucatan, Maya).

Malachra fasciata Jacq. *Wild Okra.*

Malachra radiata L.

MALVASTRUM Gray

Malvastrum coromandelianum (L.) Garcke.

MALVAVISCUS Cav.

Shrubs with stellate pubescence; leaves narrow or broad, 3–5-nerved, toothed and often lobed, petiolate; flowers solitary or clustered, the calyx subtended by numerous linear bractlets; petals red, erect, more or less connivent to form a long and narrow corolla; fruit fleshy, mucilaginous, becoming red or yellow at maturity.

Bractlets shorter than the calyx.....*M. brevibracteatus.*

Bractlets equaling or longer than the calyx.....*M. grandiflorus.*

Malvaviscus brevibracteatus E. G. Baker, Journ. Bot. 37: 347. 1899. Type material from Stann Creek, *Robertson* 34, 35. Leaves oblong or ovate-oblong, rounded or subcordate at the base, not lobed; petals 2 cm. long. Perhaps only a form of the following species.

Malvaviscus grandiflorus HBK. *Tulipán, Tulipanoia. Bizil, Tamanche* (Yucatan, Maya). Similar to the preceding, except as indicated in the key. The plants of this genus often are grown for ornament in northern hothouses because of their bright-colored flowers. The species of *Malvaviscus* are poorly understood and evidently exceedingly variable.

PAVONIA Cav.

Pavonia rosea Schlecht. *Mozote* (Honduras).

Pavonia spicata Cav. *Wild Cotton.* Occasional in coastal thickets or tidal swamps; widely distributed in tropical America. A shrub 2–3 meters high; leaves heart-shaped, almost entire, green and nearly glabrous, long-pointed; flowers in long racemes; calyx surrounded by linear or lanceolate bractlets; petals pale green or greenish white, nearly 2 cm. long; fruit a capsule.

SIDA L.

Sida acuta Burm. *Wire Weed, Broom Weed. Escobilla* (Central America). *Chichibe* (Yucatan, Maya).

Sida ciliaris L.

Sida cordifolia L. *Malva* (Honduras). *Zacmizbil* (Yucatan, Maya). *S. althaeifolia* Swartz. Plants essentially herbaceous, but often becoming somewhat woody.

Sida linifolia Juss.

Sida paniculata L.

Sida pyramidata Desp. *S. dumosa* Swartz. Sometimes becoming shrubby and as much as 1.5 meters high.

Sida rhombifolia L. *Escobilla* (Central America). One of the most abundant weeds here, as in tropical America generally.

Sida urens L. Northern River, *Gentle* 934.

THESPESIA Soland.

Thespesia populnea (L.) Soland. *Cork Tree.* Stann Creek, edge of mangrove swamp, *Schipp* 505; Belize, *Robertson* 179; West Indies and South America. A shrub or small tree; leaves long-stalked, broadly heart-shaped, acute or acuminate, entire, almost glabrous but with a few scurfy scales; flowers axillary, the yellow petals 4–7 cm. long, with purple base, turning purple in age; fruit a leathery depressed capsule 3–4.5 cm. broad. The tree has not been found elsewhere in Central America. Heartwood dark brown, somewhat variegated; moderately heavy, hard, and strong, medium-textured, irregularly grained, easy to work, and is durable; not utilized owing to its scarcity.

URENA L.

Urena lobata L. Stann Creek, *Schipp.* A large herb, or often somewhat woody; fruit small, covered with short barbed spines.

WISSADULA Medic.

Wissadula excelsior (Cav.) Presl. A large much-branched herb, sometimes becoming shrubby.

Wissadula periplocifolia (L.) Presl, var. **guatemalensis** (E. G. Baker) Hochr.

BOMBACACEAE. Cotton-tree Family

Large or small trees; leaves alternate, simple or palmately compound; pubescence chiefly of branched hairs; flowers often large and showy, with 5 petals; stamens 5 to many, either free or united to form a tube; fruit dry or fleshy, 2–5-celled, dehiscent or indehiscent, with 2 to many seeds in each cell.

Leaves simple.

Flowers large, about 10 cm. long; capsules long and narrow, the seeds embedded in brown cotton.....*Ochroma.*

Flowers 5 cm. long or smaller; fruit ovoid or globose, the seeds not surrounded by cotton.

Flowers long-pedicellate, the calyx campanulate, about 5 mm. long..... *Hampea.*

Flowers almost sessile, the tubular calyx 2.5 cm. long. *Quararibea.*

Leaves palmately compound.

Seeds winged; flowers in one-sided racemes..... *Bernoullia.*

Seeds not winged; flowers mostly solitary.

Stamen tube divided into 5 parts, each of these with a few sessile anthers at the summit; flowers small, 3–3.5 cm. long..... *Ceiba.*

Stamen tube dividing into many fascicles or filaments, the anthers borne on long filaments; flowers larger.

Seeds 1.5 cm. in diameter or larger; flowers mostly 20 cm. long or larger; fruit without cotton within..... *Pachira.*

Seeds 6 mm. or less in diameter; flowers less than 15 cm. long; capsule filled with brown cotton..... *Bombax.*

BERNOULLIA Oliver

Bernoullia flammea Oliver. *Mapola.* Collected at several localities; Oaxaca to Guatemala and Honduras. A large tree as much as 30 meters high, with a trunk 90 cm. in diameter; leaflets 5–6, oblong-oblanceolate, 10–22 cm. long, acuminate, glabrous; inflorescence bright fire-red; calyx 1 cm. long; petals recurved; stamen tube long-exserted; fruit brown, ellipsoid, woody, 20 cm. long.

BOMBAX L.

Bombax ellipticum HBK. *Mapola. Kuyche* (Yucatan, Maya). Occasional; Mexico to Nicaragua. A large unarmed deciduous tree with smooth, gray or greenish trunk; leaflets 5, elliptic to obovate, entire, glabrous or nearly so, usually rounded at the apex; stamens several hundred, purple-red or white; capsule woody, 10–15 cm. long. Wood brownish, soft, tough and fibrous, not durable; not utilized.

CEIBA Medic.

Ceiba pentandra (L.) Gaertn. *Cotton-tree. Ceiba. Yaxche* (Maya). Occasional; widely distributed in tropical America. A giant tree with large buttresses, the bark gray or greenish, essentially smooth but covered with short conic spines; leaflets 5–7 or more, narrow, long pointed, nearly or quite glabrous, pale beneath; petals white or pink; capsule oblong, 10 cm. long. One of the half dozen

largest trees of Central America, often with a broad spreading crown. The silky fiber surrounding the seeds is employed commonly for stuffing pillows and cushions. Large amounts of it are exported from the East Indies and West Africa (where, also, the tree is native) as kapok or kapok fiber, for use in stuffing mattresses, life preservers, pillows, and other articles. The oil of the seeds has been utilized for illumination and for the manufacture of soap. Dugout canoes are made from the large tree trunks. Wood gray, light and soft but tough, coarse-textured, perishable in contact with the ground; suitable for box boards and rough lumber, but requires special handling and drying. (For description of the wood see *T. of T. A.*, pp. 419–420.)

HAMPEA Schlecht.

Small trees; leaves long-stalked, broad, entire or shallowly lobed, finely stellate-pubescent; flowers small, white, clustered in the leaf axils; capsule globose, woody, densely stellate-tomentose.

Pedicels mostly shorter than the flowers; leaves, at least most of them, shallowly cordate at the base..... *H. euryphylla.*

Pedicels much longer than the flowers; leaves broadly rounded to obtuse at the base..... *H. trilobata.*

Hampea euryphylla Standl. Field Mus. Bot. 11: 135. 1932. Type from Temash River, *Smart & Stevenson* 142 (Yale 19793); collected also at several other localities. Leaves rounded and as broad as long to rounded-ovate, entire, rather coarsely brown-pubescent beneath.

Hampea trilobata Standl. *Moho, Kajana.* Frequent, at least in the northern part of the Colony; Yucatan. A tree about 6 meters high; leaves rather small, finely and closely pubescent beneath, often shallowly 3-lobed near the apex; capsule minutely tomentose, about 1.7 cm. long.

OCHROMA Swartz. Balsa

Medium-sized trees with spreading crown; leaves very large, long-stalked, usually shallowly lobed, stellate-pubescent; flowers 10–15 cm. long, whitish; fruit a long narrow capsule containing numerous small seeds embedded in brown cotton.—The trees grow with extreme rapidity, attaining a large size in half a dozen years or less. The silk or cotton of the pods is often employed like kapok. Several species of *Ochroma* have been described from Central America, but their characters seem too inconstant for serious consideration,

at least for the most part. Indeed, it is questionable whether the Central American forms are really different from the original *Ochroma lagopus* Swartz, of the Greater Antilles. The very light and soft, but comparatively strong wood is used locally, but is the same as the well-known Balsa Wood of commerce. (For description of the timber see *T. of T. A.*, pp. 424–426.)

Leaves green on both sides, almost glabrous.....*O. concolor.*

Leaves densely brownish-tomentose beneath.....*O. limonensis.*

Ochroma concolor Rowlee. *Polak.* Reported from Livingston, collected by Hummel; Guatemala. This species is probably a mere variant of the following:

Ochroma limonensis Rowlee. *Polak, Balsa. Guano* (Honduras). Frequent in second-growth; south to Panama, and probably in southern Mexico. Material reported from British Honduras as *O. bicolor* Rowlee and *O. velutina* Rowlee doubtless is referable to this species, as here treated.

PACHIRA Aubl.

Pachira aquatica Aubl. *Provision Tree. Santo Domingo, Zapotón.* Frequent in lowland forest or in swamps; southern Mexico to South America. A corpulent tree, sometimes 18 meters high, with a trunk diameter of 25 cm. or more, the bark smooth and pale; leaflets 5–7, narrow, short-pointed, almost glabrous, entire, pale beneath; calyx short and cup-like, the narrow, brownish and greenish petals 25–30 cm. long; stamens bright purple; fruit ovoid, as large as a coconut, russet-brown, containing numerous large brown seeds embedded in whitish flesh. The tree often flowers and fruits when only 2–3 meters high. The trees frequently are so heavily burdened with great numbers of the solid fruits that one wonders how they are able to support their load. The flowers are showy and handsome. The seeds often are boiled or roasted and eaten. Wood light and soft, but tough and fibrous; not utilized.

It is possible that *P. macrocarpa* (Schlecht. & Cham.) Walp., which has been reported from the Colony, may occur here, but there are no specimens of it available at present. In that species the petals are normally less than 20 cm. long.

QUARARIBEA Aubl.

Trees or shrubs; leaves mostly oblong, entire or nearly so, pinnate-nerved; peduncles solitary, 1-flowered, opposite the leaves; calyx

tubular or obconic, 3–5-toothed; petals narrow, white; stamen column elongate, the anthers borne at the apex; fruit 2-celled, hard and not opening, sometimes by abortion only 1-celled. The dry foliage of these trees has the odor of Slippery Elm (*Ulmus fulva*).

Leaves with small dense tufts of hairs in the axils of the nerves beneath ..... *Q. funebris.*

Leaves glabrous beneath, or at least not tufted ..... *Q. Fieldii.*

Quararibea Fieldii Millsp. *Batidos, Majahás. Coco Mamá* (Honduras). Occasional in forest; Yucatan to Honduras. A tree as much as 12 meters high, with a trunk up to 60 cm. in diameter, the branches in whorls; leaves short-stalked, acuminate; calyx narrow, 2.5 cm. long, the petals almost twice as long; fruit tomentose, 3 cm. long.

Quararibea funebris (Llave) Standl. *Mahass.* Middlesex and elsewhere; southern Mexico to Salvador. A tree 15 meters high, the trunk 30 cm. in diameter. Wood white, subject to blue stain; moderately hard, coarse-rayed, medium-textured, easy to work, is not durable; suitable for interior construction and box boards. (See *T. of T. A.*, pp. 422–424.)

STERCULIACEAE. Cacao Family

Herbs, shrubs, or trees, the pubescence often of branched hairs; leaves alternate, simple, with stipules; flowers small or large, the calyx 5-lobed; petals 5, rarely none, sometimes clawed, either free or united with the stamen tube; fruit dry or fleshy.

Leaves entire. Shrubs or trees.

Fruit covered with stiff spines, dry ..... *Byttneria.*

Fruit not spiny, fleshy ..... *Theobroma.*

Leaves toothed.

Fruit spirally twisted; petals red; shrubs ..... *Helicteres.*

Fruit not spirally twisted.

Trees; fruit woody, covered with hard sharp-pointed tubercles. *Guazuma.*

Herbs, the stems sometimes somewhat woody; fruit a smooth capsule.

Flowers red, 3 cm. broad; plants almost glabrous .. *Pentapetes.*

Flowers not red, small; plants densely pubescent.

Capsule 1-celled ..... *Waltheria.*

Capsule 5-celled ..... *Melochia.*

BYTTNERIA L.

Shrubs, prickly or unarmed, often somewhat scandent or with pendent branches; flowers small, usually in lateral umbels or cymes; calyx 5-lobate; petals 5, clawed, hooded, incurved at the apex and produced into a long appendage; fruit a 5-celled capsule covered with long spines.

Stems armed with recurved prickles.....*B. aculeata.*

Stems unarmed.....*B. catalpifolia.*

Byttneria aculeata Jacq. *B. carthaginensis* Jacq. *Zarza Hueca* (Honduras). *Tezak* (Yucatan, Maya). Common in thickets; widely distributed in tropical America. A shrub with hollow branches; leaves short-petiolate, lanceolate to broadly ovate, entire or toothed, often prickly beneath; young leaves usually blotched with silver; flowers purplish brown. The shrub often forms dense and impenetrable thickets. When it invades cultivated ground, particularly banana plantations, it becomes a troublesome weed, difficult to exterminate.

Byttneria catalpifolia Jacq. Reported without locality, *Peck* 827; Mexico to Brazil. An unarmed shrub or vine; leaves large, ovate-cordate, pubescent or glabrous beneath, entire; flowers white; fruit much larger than in the preceding species, its body 2.5–3.5 cm. wide.

GUAZUMA Adans.

Guazuma ulmifolia Lam. *G. tomentosa* HBK. *Bay Cedar, Bastard Cedar. Caulote. Guácimo* (Central America). *Pixoy* (Maya). Frequent in thickets; widely distributed in tropical America. A small or medium-sized tree with spreading or rounded crown; leaves short-stalked, oblong to ovate, toothed, cordate and unequal at the base, covered with a fine pale stellate pubescence; flowers small, in axillary clusters, the petals pale yellow; fruit an oval woody capsule 2–4 cm. long covered with short hard protuberances. The sweet pulp of the fruit is often eaten, but the numerous large hard seeds are objectionable. Stock eat the fallen fruits greedily, and often browse on the young branches. The bark contains a tough fiber that has been employed for making cordage. The mucilaginous sap of the branches sometimes is used for clarifying sugar sirup. Wood pinkish, of rather light weight, but tough and strong, rather coarse-textured, not durable; suitable for slack cooperage and interior construction. (See *T. of T. A.*, pp. 428–429.)

HELICTERES L.

Helicteres guazumifolia HBK. Occasional in thickets; widely distributed in tropical America. A shrub with small toothed leaves; flowers axillary, the tubular calyx 1.5–2 cm. long, the petals bright red; fruit hard, 5-celled, twisted like a screw. The twisted fruits distinguish this shrub from all other plants of the region. Some of the British Honduras material has been referred to *H. retinophylla* Fries, which it is altogether impossible to separate definitely from *H. guazumifolia.*

MELOCHIA L.

Melochia hirsuta Cav.

Melochia lupulina Swartz. Both these species are essentially herbs, although long-lived individuals may become somewhat woody.

Melochia nodiflora Swartz.

Melochia pyramidata L.

PENTAPETES L.

Pentapetes phoenicea L. Reported on the basis of *Campbell* 26; perhaps naturalized, but more probably in cultivation; native of Asia.

STERCULIA L.

Sterculia mexicana R. Br. Temash River, primary forest, *Schipp* 1321; southern Mexico. A tree of thirty meters, the trunk 120 cm. in diameter; leaves digitately compound, the 7–9 leaflets oblong-lanceolate, acuminate, stalked, almost glabrous when fully developed; flowers small, cream-colored, in small or large panicles; petals none; fruit of 5 woody follicles. According to Schipp, "the largest tree in this locality."

THEOBROMA L.

Theobroma Cacao L. *Cacao. Cucu* (Maya). Cultivated and also wild in the forests, occurring especially in the mountains; widely distributed in cultivation; native in Mexico and Central America, and perhaps also farther south. The plant is too well known to need description or discussion of its economic applications. It was grown extensively by the aboriginal inhabitants of Middle America. It is reported that the Indians of British Honduras, like those of other regions, formerly used the seeds as money. The modern Mayas of the region prepare a beverage from roasted cacao seeds, which are ground finely and mixed with cooked pulverized maize flour and

flavored with black pepper. The last is employed in place of the various spices that formerly were used by the native Americans for flavoring the drink.

Theobroma angustifolium DC. is listed by Sprague and Riley, with the statement: "Morris considered that some of the wild cacao trees seen by him in British Honduras approached *T. angustifolium* in their characters." Since the two species are altogether unlike in foliage and other characters, it is hard to understand this statement.

WALTHERIA L.

Waltheria americana L. *Zacxiu* (Yucatan, Maya). Plants essentially herbaceous, sometimes becoming somewhat shrubby.

DILLENIACEAE. Dillenia Family

Trees or shrubs, often climbing; leaves alternate, simple, entire or toothed, short-stalked, often very rough, without stipules; flowers mostly panicled or clustered; sepals 3–5, imbricated; petals thin and delicate; stamens numerous; fruit of 1–5 carpels which split lengthwise at maturity; seeds commonly provided with a fleshy aril.

Plants erect shrubs or small trees.....*Curatella.*

Plants climbing shrubs.

Sepals unlike, the 2 inner ones erect and enclosing the fruit; flowers mostly in terminal panicles.....*Davilla.*

Sepals alike, spreading or ascending, not enclosing the fruit.

Flowers chiefly in terminal panicles; carpels 1–5; leaves rough on one or both surfaces.....*Tetracera.*

Flowers in lateral panicles or umbels; carpel 1; leaves smooth. *Doliocarpus.*

CURATELLA L. Sandpaper Tree

Curatella americana L. *Yaha, Chaparro.* Frequent in pine forest; widely distributed in tropical America. A shrub or small tree, as much as 6 meters high, with a trunk 15 cm. in diameter, or larger; leaves large, oval or elliptic, thick, sinuate, almost sessile; flowers small, yellowish, in rather large, chiefly terminal panicles; sepals 5, the inner ones enclosing the fruit; seeds black, surrounded by an aril. The rough leaves often are employed as a substitute for sandpaper. The bark has been employed for tanning. Wood reddish brown, rather hard and heavy, with conspicuous rays suggesting Oak (*Quercus*); suitable for small cabinet work and articles of turnery. (See *T. of T. A.*, pp. 431–432.)

DAVILLA Vand.

Small or large, woody vines, the leaves leathery, conspicuously nerved, usually very rough to the touch; flowers yellow, in panicles, the petals thin and delicate, soon withering and falling; fruit of a single 1-seeded carpel.

Inner sepals covered with slender spreading hairs.....*D. Kunthii.*

Inner sepals merely scabrous or almost glabrous.....*D. aspera.*

Davilla aspera (Aubl.) Naud. Corozal District, collected only by Gentle; Trinidad and South America. Leaves very rough, obovate to almost orbicular, rounded at the apex, obscurely toothed.

Davilla Kunthii St. Hil. *Chaparro.* Frequent in thickets; widely distributed in tropical America. A small or large, woody vine; leaves obovate to rounded, rounded at the apex, leathery, sharply toothed or almost entire, very rough; flowers yellow, in chiefly terminal panicles, the petals delicate and soon falling; sepals 5, green, the 2 inner ones enclosing the small fruit; fruit of a single carpel.

DOLIOCARPUS Roland

Doliocarpus dentatus (Aubl.) Standl. In thickets; ranging to northern South America. A small or large vine; leaves obovate, acuminate, coarsely toothed, smooth, glabrous or nearly so; flowers small, usually clustered on naked branches, stalked; fruit globose, red, 1 cm. in diameter, glabrous.

TETRACERA L.

Woody vines; leaves oblong to obovate, short-stalked, toothed or almost entire, rough on one or both sides; flowers small, in terminal or axillary panicles; sepals 4–6; fruit of 1–5 carpels, these distinct or nearly so.

Fruit of a single carpel; sepals glabrous on the inner surface. *T. sessiliflora.*

Fruit of 2–5 carpels; sepals silky on the inner surface.

Leaves very scabrous, rough on the lower surface.....*T. volubilis.*

Leaves softly velvety-pubescent on the lower surface....*T. mollis.*

Tetracera mollis Standl. Field Mus. Bot. 8: 25. 1930. Type from Honey Camp, *Lundell* 47; also *Lundell* 505; Maskall, *Gentle* 1000; Petén. Leaves inconspicuously dentate, very rough on the upper surface.

Tetracera sessiliflora Triana & Planch. Stann Creek, in coastal thickets; southern Mexico to Colombia. Carpels of the fruit 6–8 mm. long, shining; flowers white.

Tetracera volubilis L. Occasional in thickets; widely distributed in tropical America. Carpels sparsely hairy at the apex. The rough leaves of this and other species are used like those of *Curatella*. The Tetraceras are well known in Central America as water vines, the stems yielding potable sap when cut.

ACTINIDIACEAE. Actinidia Family

SAURAUIA Willd.

Saurauia pauciserrata Hemsl. In primary forest; Central America. A slender tree as much as 6 meters high, with a trunk diameter of 10 cm.; leaves alternate, without stipules, short-stalked, oblanceolate-oblong, obscurely toothed, almost glabrous; flowers small, white, fragrant, in axillary panicles shorter than the leaves; sepals and petals each 5; stamens numerous, adnate to the base of the corolla; fruit berry-like, almost 1 cm. in diameter, pinkish white. The pulp of the fruit, which is transparent and looks somewhat like white of egg, is good to eat. Wood pale reddish brown; rather light, but firm, medium-textured, straight-grained, of much the same consistency as Red Gum (*Liquidambar*); not utilized owing to the small size of the tree. (See *Trop. Woods* 8: 11–13.)

OCHNACEAE. Ochna Family

Herbs, shrubs, or small trees, glabrous; leaves simple, with entire or toothed stipules; flowers small or large and showy, with 5 sepals, 5 petals, and a 3–6-celled ovary.

OURATEA Aubl.

Shrubs or small trees; leaves oblong to elliptic, leathery, shining, finely serrate, short-petioled; flowers large and showy, with thin, bright yellow petals; fruit juicy, black, borne upon a fleshy red disk. Wood pale reddish brown, moderately hard and heavy, fine-textured, easy to work, fairly durable; has rather prominent rays producing attractive figure on radial surface; consistency suggests Beech (*Fagus*); suited for small cabinet work.

Veins of the leaves conspicuously impressed.....*O. nitida.*

Veins not impressed, more or less prominent.

Panicles broad, pyramidal.....*O. pyramidalis.*

Panicles narrow, raceme-like.

Flower buds narrowly ovoid, acute.....*O. stenobotrys.*

Flower buds broadly ovoid, obtuse.....*O. Peckii.*

Ouratea nitida (Swartz) Engler. *Billbird Patter. Xcanlol* (Maya). Stann Creek Valley, Honey Camp, and elsewhere, sometimes in swampy forest; Honduras to Panama; West Indies. A straggling shrub 2 meters high; leaves acuminate; flowers in broad panicles.

Ouratea Peckii Riley, Kew Bull. 109. 1924. Type, *Peck* 617; Temash River and elsewhere. A shrub 3.5 meters high.

Ouratea pyramidalis Riley. *Billbird Patter.* Occasional in forest or thickets; Guatemala and southern Mexico. Leaves oblong-elliptic, 11–15 cm. long, sharply serrate; sepals about 7 mm. long.

Ouratea stenobotrys Riley, Kew Bull. 109. 1924. Type collected by Hooper, without locality; Freshwater Creek; Petén. Panicles 10–15 cm. long; sepals as much as 8.5 mm. long. This probably is not specifically distinct from *O. Peckii.*

SAUVAGESIA L.

Sauvagesia erecta L.

Sauvagesia tenella Lam. All Pines, *Schipp* S184.

MARCGRAVIACEAE. Marcgravia Family

Epiphytic or climbing shrubs; leaves alternate, thick, entire, more or less fleshy, the juvenile ones often very unlike adult ones; inflorescence terminal, racemose or umbellate, pendent, often with greatly modified nectar-bearing bracts; flowers perfect, with 5 imbricated sepals; petals 5, more or less united and falling off as a cap; stamens 5–40; fruit globose, indehiscent, often fleshy, 5–many-celled.

Flowers in racemes; bracts sessile, long-spurred.....*Souroubea.*

Flowers in umbels; bracts long-stalked, helmet-shaped..*Marcgravia.*

MARCGRAVIA L.

Small or large, epiphytic vines with fleshy alternate leaves; inflorescence umbel-like, the flowers long-pediceled, the nectaries large, inverted helmet-shaped, pendent like dippers.

Leaves long-acuminate, with conspicuous lateral nerves; flowers inserted obliquely upon the pedicel.....*M. nepenthoides.*

Leaves obtuse, the nerves obsolete; flowers not oblique.

M. Schippii.

Marcgravia nepenthoides Seem. *Cachimba* (Honduras). Middlesex, *Schipp* 476; southward to Panama. A glabrous epiphytic woody vine, sometimes 15 meters long, the trunk 10 cm. in diameter; leaves almost sessile, oblong, acuminate; flowers long-stalked. The reddish nectaries are pendent like dippers. They contain nectar, and are much visited by hummingbirds and insects.

Marcgravia Schippii Standl. Carnegie Inst. Wash. Publ. 461:71. 1935. Type from Camp 32, Guatemalan boundary, *Schipp* 1273. A large vine 24 meters long, the stem 7.5 cm. in diameter; leaves sessile, oblong, oblique at the base, 7–8 cm. long.

SOUROUBEA Aubl.

Souroubea guianensis Aubl. Middlesex, *Schipp* 514; southward to the Guianas. A large woody vine as much as 15 meters long, glabrous; leaves short-stalked, oblong to oblong-obovate, rounded or obtuse at the apex; flowers fragrant, red tinged with yellow, short-stalked.

QUIINACEAE. Quiina Family

QUIINA Aubl.

Quiina Schippii Standl. Field Mus. Bot. 8: 28. 1930. Type from Middlesex, in forest, *Schipp* 238; Mullins River Road, in forest, *Schipp* 231; Machaca, *Schipp* S572; Honduras. An almost glabrous tree 6–8 meters high, the trunk 7–10 cm. in diameter; stipules conspicuous; leaves opposite or ternate, short-petiolate, oblong-lanceolate, long-acuminate, entire; flowers small, in short racemes in the leaf axils or on old branches; sepals 4; petals 4, white, 2.5 mm. long; fruit a glabrous red berry 8 mm. long.

THEACEAE. Tea Family

Shrubs or trees; leaves alternate or opposite, usually leathery, entire or toothed, stalked, without stipules; flowers axillary, small or large, regular; sepals and petals each 5; stamens numerous; fruit capsular or leathery and indehiscent. The woods are of no importance in the Colony.

Leaves finely dentate.....*Eurya.*

Leaves entire.

Flowers in racemes.....*Marila.*

Flowers solitary or clustered in the leaf axils.....*Ternstroemia.*

EURYA Thunb.

Eurya lancifolia Standl. Field Mus. Bot. 8: 317. 1931. Type from Middlesex, mountain forest, *Schipp* 455; Camp 36, Guatemalan boundary, *Schipp* S710. A tree 15 meters high, the trunk 30 cm. in diameter; leaves short-stalked, narrowly lance-oblong, long-acuminate, finely toothed, thinly hairy beneath; flowers cream-colored; fruit black, glabrous, 7 mm. long.

Laplacea haematoxylon (Swartz) Don has been reported as the Ironwood of British Honduras, but that species, a native of Jamaica, has not appeared in recent collections. It is probable that the record really related to *Dialium*, which is called Ironwood in British Honduras.

MARILA Swartz

Marila macrophylla Benth. Big Creek, edge of stream, *Schipp* 101; southward to Panama. A tree 12 meters high; leaves oblong, short-petioled, glabrous, acuminate, obtuse or rounded at the base; racemes many-flowered, minutely appressed-hairy; flowers green.

TERNSTROEMIA L. f.

Ternstroemia Tepezapote Schlecht. & Cham. Frequent in forest; Mexico to Honduras. A glabrous tree as much as 9 meters high, with a trunk diameter of 12 cm.; leaves short-stalked, thick and leathery, oblong to obovate; sepals thick and leathery, persisting beneath the small ovoid fruit. British Honduras specimens have been referred to *T. sphaerocarpa* (Rose) Melch. and *T. oocarpa* (Rose) Melch., but all of them probably represent a single species. The species of the genus are poorly defined, and it seems likely that most of those reported for Mexico and Central America will have to be reduced to synonymy.

GUTTIFERAE. Clusia Family

Shrubs or trees; leaves opposite, entire, usually leathery, without stipules; sap resinous, commonly yellow; flowers mostly of separate sexes, often large and showy, with 2–6 or more sepals, as many petals, and numerous stamens; ovary 2–several-celled.

Flowers solitary or clustered in the leaf axils or at the ends of the branches.

Leaves broadly rounded at the apex; cultivated trees.... *Mammea.*

Leaves acute or acuminate; native trees.

Flowers globose, red..... *Symphonia.*

Flowers not globose, with spreading petals, whitish.....*Rheedia.*

Flowers in racemes or panicles.

Fruit not opening at maturity; leaves with exceedingly numerous crowded parallel nerves.....*Calophyllum.*

Fruit opening at maturity; nerves of the leaves not crowded.

Cells of the ovary with 2 or more ovules; flowers large; leaves usually leathery.....*Clusia.*

Cells of the fruit with 1 ovule; flowers small; leaves thin. *Tovomitopsis.*

CALOPHYLLUM L.

Calophyllum brasiliense Camb. var. **Rekoi** Standl. *Santa María.* Frequent in mixed rain forest, on all types of soil; southern Mexico to Panama; the species ranging to Brazil. A large or medium-sized tree, sometimes 36 meters high, with pale, almost smooth bark; leaves short-stalked, oblong to elliptic, acute or acuminate, leathery, usually shining, with very numerous close parallel lateral nerves; flowers white, fragrant, 1 cm. broad, in short racemes; fruit globose, fleshy, 4–5 cm. in diameter. This makes a handsome shade tree because of its broad crown and dense persistent foliage. The British Honduras specimens are variable in leaf form, but apparently all are referable to this single variety. The name *C. Calaba* Jacq. has been applied incorrectly to the British Honduras tree. Wood reddish, moderately hard, fairly easy to work, though inclined to warp, fairly durable; used for beams, framing timber, and veneers. (See *Trop. Woods* 30: 9–17.)

CLUSIA L.

Glabrous shrubs or trees, at first usually epiphytic, in age often standing alone; leaves usually thick and leathery, hard when dried, with numerous lateral nerves; flowers often large and showy, white or pink, with thick fleshy petals; fruit a leathery capsule, splitting at maturity into several segments, these spreading and radiating like the points of a star.

Leaves acute or acuminate, rather thin.....*C. mexicana.*

Leaves rounded or obtuse at the apex, very thick.

Leaves slender-petiolate, the lateral nerves suberect, ascending at an angle of less than 45 degrees.....*C. Lundellii.*

Leaves sessile or on broadly margined petioles, the nerves usually ascending at an angle of more than 45 degrees.

Leaves broadest at or near the middle.....*C. belizensis.*

Leaves broadest above the middle.

Leaves relatively small, mostly 2–4.5 cm. wide; capsules usually less than 2 cm. long.....*C. flava.*

Leaves larger, usually 5–10 cm. wide; capsules larger.

Leaves very broadly cuneate-obovate, often almost as broad as long, the petioles about 1 cm. wide..*C. rosea.*

Leaves obovate-oblong, about twice as long as broad, the petioles much narrower.....*C. Salvinii.*

Clusia belizensis Standl. Carnegie Inst. Wash. Publ. 461: 72. 1935. Type from Camp 33, Guatemalan boundary, 870 meters, *Schipp* 1242. A tree of 9 meters, the trunk 30 cm. in diameter; leaves short-petiolate, oblong or elliptic, 8–14 cm. long.

Clusia flava Jacq. *Matapalo. Chunup* (Yucatan, Maya). Occasional in forest; widely distributed in tropical America. A tree 6–7.5 meters high, the trunk 8 cm. in diameter; leaves mostly small, often thin when dried; flowers white or cream-colored. It is reported that the latex, which is yellow at first, as in related species, is sometimes used to adulterate chicle.

Clusia Lundellii Standl. *Matapalo.* Silk Grass, *N. S. Stevenson* 12; Petén. A glabrous tree; leaves narrowly oblong or obovate-oblong, 14–17 cm. long; capsules 3.5 cm. long.

Clusia mexicana Vesque. Occasional in forests; Mexico to Salvador. A shrub or a tree as much as 9 meters high, with a trunk 7 cm. in diameter; leaves drying thin, small, oblong to elliptic, slender-stalked; flowers small, cream-colored.

Clusia rosea Jacq. Camp 34, Guatemalan boundary, 870 meters, *Schipp* 1288; of wide distribution in tropical America. A tree of 18 meters according to Schipp, the trunk 60 cm. in diameter; leaves often large and very thick; flowers large, white or cream-colored.

Clusia Salvinii Donn. Smith. Stann Creek region, and Cockscomb Mountains, in swampy ground or on hilltops; Mexico to Honduras. A tree 9 meters high, with trunk diameter of 12 cm.; leaves thick and hard when dried, narrowly obovate, narrowed to the base, with very numerous lateral nerves; petals cream-colored.

MAMMEA L.

Mammea americana L. *Mammee Apple. Mamey* (Central America). *Chacalhaaz* (Yucatan, Maya). Planted as a fruit and shade tree; native perhaps of the West Indies. A large glabrous

tree with broad, very dense crown and milky latex; leaves oval or elliptic, rounded at the apex, thick and leathery, with very numerous lateral nerves; flowers white, axillary, the petals 2 cm. long; fruit subglobose, 8–15 cm. in diameter, brownish, with yellow or reddish flesh. The fruit is of excellent flavor, somewhat resembling a clingstone peach; it is eaten raw and also made into preserves and dulces. Wood reddish brown, hard, heavy, strong, and durable; little used because of its scarcity.

RHEEDIA L.

Rheedia edulis (Seem.) Triana & Planch. *Waika Plum. Limoncillo* (probably an erroneous name). Frequent in forest; Mexico to Panama. A large or medium-sized, glabrous tree with smooth brownish trunk; leaves short-stalked, narrowly oblong or lance-oblong, acuminate, leathery, with numerous lateral nerves; flowers small, cream-colored, clustered in the leaf axils or on naked branches, slender-stalked; fruit olive-like, yellow, 2.5 cm. long, containing 1 or 2 seeds surrounded by scant pulp. Although the fruit is edible, it is of inferior quality and flavor, and is little esteemed. Wood rosy-yellow, resinous, hard, heavy, splintery, coarse-textured; numerous radial gum ducts present; timber little used.

SYMPHONIA L. f.

Symphonia globulifera L. f. *Waika Chewstick, Wycot. Leche Amarilla. Corban.* Frequent in forest; widely distributed in tropical America. A small or often tall, glabrous tree as much as 18 meters high, with trunk diameter of 45 cm., or larger; leaves short-stalked, oblong, acuminate, thick, with numerous nerves; flowers globose, red. The resin exuding from the trunk was employed by the Indians for caulking boats and making torches. Wood greenish brown, rather hard and heavy, coarse-textured, works fairly well, appears moderately durable; used locally for railway crossties and boat keels, and exported in small amounts for veneers.

TOVOMITOPSIS Planch. & Triana

Tovomitopsis nicaraguensis (Oerst.) Triana & Planch. Camp 32, Guatemalan boundary, *Schipp* S628; Columbia-Toledo, *Donald S. Stevenson* 6 (Yale 12302); ranging to Panama. A tree of 12 meters or less, the trunk as much as 30 cm. in diameter; leaves large, thin, slender-stalked, oblong-elliptic, acute, glabrous; flowers small, white, fragrant, in large open panicles; fruit pear-shaped, reddish. Wood

reddish or purplish, with satiny luster, of light weight, but firm and tenacious, medium-textured, straight-grained; rays conspicuous on radial surface; suitable for small cabinet work.

HYPERICACEAE. St. Johnswort Family

Herbs, shrubs, or small trees; leaves opposite, entire, without stipules; flowers perfect, terminal, in cymes or panicles, sometimes solitary; sepals 5 or 4, imbricate; petals 5–4; stamens numerous; fruit a berry or a capsule, 3–5-celled.

Fruit a capsule; herbs..... *Hypericum.*
Fruit a berry; shrubs or small trees..... *Vismia.*

HYPERICUM L.

Hypericum pratense Schlecht. & Cham. Isabella Pine Ridge, Belize River, *Lundell* 4136.

Hypericum terrae-firmae Sprague & Riley, Kew Bull. 13. 1924. Type collected by Peck, No. 321, without locality.

VISMIA Vand.

Shrubs or small trees; leaves usually more or less tomentose beneath; flowers inconspicuous, in terminal cymes; sepals and petals each 5, the petals usually villous within; stamens arranged in 5 clusters.

Leaves cordate at the base..... *V. latifolia.*
Leaves rounded at the base..... *V. ferruginea.*

Vismia ferruginea HBK. *V. Camparaguey* Sprague & Riley, Kew Bull. 13. 1924. *Old William, Can't-be-helped, Yellow Sangre. Achiotillo, Camparaguey* (Guatemala). Occasional in thickets; Central America and northern South America. A shrub or small tree with bright orange-colored latex; leaves large, oblong or lance-oblong, acuminate, green above, rusty-tomentose beneath; flowers in rather large, panicled cymes. One of the local names is explained thus by J. B. Kinloch: "The wood is poor for building huts, but if nothing else is available this is used as 'it can't be helped.'" Wood pinkish, moderately hard, strong, tough, medium-textured, fairly straight-grained, not difficult to work, not highly durable; little used.

Vismia latifolia Choisy. Frequent in thickets; southward to northern South America. Similar to the preceding, and rather doubtfully distinct.

CISTACEAE. Rock-rose Family

LECHEA L.

Lechea tripetala (Moc. & Sessé) Britton.

BIXACEAE. Anatto Family

BIXA L. Anatto

Bixa Orellana L. *Atta. Achiote. Kuxub* (Yucatan, Maya). Frequent in thickets, also cultivated; widely distributed in tropical America. A shrub or small tree; leaves long-petiolate, alternate, ovate, long-acuminate, minutely brown-scaly beneath; flowers rather large, pink or white, in terminal panicles; fruit a globose or ovoid capsule, usually covered with long flexible spine-like bristles, but sometimes smooth. The numerous round seeds are imbedded in orange-red pulp, from which is obtained anatto dye, used extensively in North America and Europe for coloring butter and cheese, textiles, oils and varnishes, and soap. In Central America it is employed generally for imparting a red color to boiled rice. The dye was used by the aborigines for painting their bodies, partly for ornament and partly to protect them against the attacks of insects. The bark contains a tough fiber. Wood pinkish-yellow, light, soft, tenacious, fine-textured, not durable; not utilized.

COCHLOSPERMACEAE. Cochlospermum Family

COCHLOSPERMUM Kunth

Cochlospermum vitifolium (Willd.) Spreng. *Wild Cotton. Pochote. Chum* (Yucatan, Maya). Frequent in thickets or open forest; widely distributed in tropical America. A stocky tree 9 meters high with a trunk 7 cm. in diameter, or often flowering when only a shrub; branches red-brown; leaves alternate, long-stalked, deeply cordate at the base, palmately 5–7-lobed, the lobes toothed, glabrate; flowers bright yellow, 10 cm. broad, in terminal clusters, with numerous stamens; fruit a thin-walled capsule 7–8 cm. long, the numerous seeds covered with cottony hairs. The bark contains a tough fiber. The tree is a conspicuous one when in flower, usually when it is devoid of leaves, the great yellow blossoms being strikingly suggestive of roses. Wood white or pale brown, very light, soft, spongy, brittle, laminated, perishable; not utilized.

VIOLACEAE. Violet Family

Herbs, shrubs, or small trees, sometimes woody vines; leaves simple, toothed, provided with stipules; flowers usually small, with

5 sepals, 5 petals which often are unequal, and 5 stamens; fruit a 1-celled capsule, opening by 3 valves.

Lower petal spurred; climbing shrubs; leaves alternate. . .*Corynostylis.*

Lower petal not spurred; plants not climbing.

Corolla somewhat irregular; stamens united; leaves alternate. *Hybanthus.*

Corolla regular; stamens free; leaves opposite. . . . . *Rinorea.*

CORYNOSTYLIS Mart. & Zucc.

Corynostylis arborea (L.) Blake. Apparently frequent in forest and thickets; Mexico to South America. A large vine as much as 9 meters long, with a woody stem 2.5 cm. in diameter; leaves petiolate, ovate or elliptic, glabrous; flowers white, 3.5 cm. long.

HYBANTHUS Jacq.

Herbs, shrubs, or trees; flowers small, solitary in the leaf axils or in racemes or cymes, white.

Plants herbaceous, densely hairy. . . . . *H. Ipecacuanha.*

Plants trees.

Leaves subsessile, 12–27 cm. long. . . . . *H. subsessilis.*

Leaves petiolate, 6–14 cm. long. . . . . *H. malpighiifolius.*

Hybanthus Ipecacuanha (L.) Taub. Big Fall Pine Ridge, Belize River, *Lundell* 4230. A South American species, unknown elsewhere in North America.

Hybanthus malpighiifolius Standl. Carnegie Inst. Wash. Publ. 461: 73. 1935. Camp 32, Guatemalan boundary, *Schipp* 1278, the type. A tree of 10 meters, the trunk 15 cm. in diameter; leaves narrowly lanceolate, narrowly long-acuminate; flowers about 2 mm. long.

Hybanthus subsessilis Standl. Carnegie Inst. Wash. Publ. 461: 72. 1935. In forest, Río Grande, *Schipp* 1132; Guatemala. A glabrous tree 6–18 meters high, the trunk as much as 45 cm. in diameter; leaves narrowly oblong, acute or acuminate, narrowly rounded at the base. The generic position of this and the last preceding species is somewhat uncertain.

RINOREA Aubl.

Slender shrubs or small trees; leaves opposite, short-petioled, thin, acuminate, obscurely serrate or almost entire; stipules small,

deciduous; flowers very small, in racemes or panicles; sepals 5, equal; petals 5, recurved at the apex; stamens 5; fruit a strongly compressed capsule.

Flowers in small panicles..... *R. Hummelii.*

Flowers in racemes.

Leaves acute at the base..... *R. guatemalensis.*

Leaves rounded or shallowly cordate at the base... *R. deflexiflora.*

Rinorea deflexiflora Bartlett. *Wild Coffee.* Mullins River Road; Stann Creek Valley; Guatemala. A shrub 2.5–4.5 meters high; leaves almost sessile, obovate; flowers cream-colored.

Rinorea guatemalensis (Wats.) Bartlett. *Wild Coffee. Cafecillo.* Frequent in forest or thickets; ranging to Honduras. A tree as much as 9 meters high, with trunk diameter of 12 cm.; leaves conspicuously petiolate, chiefly oblong-elliptic, glabrous or nearly so; flowers white. Wood yellowish, hard, heavy, strong, fine-textured, takes a high polish, is not durable; not utilized. (See *Trop. Woods* 7: 26.)

Rinorea Hummelii Sprague, Kew Bull. 307. 1921. *Wild Coffee.* Type from Salt Creek, *Hummel* 11; Hillbank; Petén. A small tree; leaves obovate, cuneate at the base, glabrous beneath.

FLACOURTIACEAE. Flacourtia Family

Shrubs or trees; leaves simple, alternate, entire or toothed, petioled, often with translucent dots and lines; stipules usually minute or wanting; flowers small, perfect or of separate sexes; calyx 3–7-lobed or of as many distinct sepals; petals as many as the calyx segments or often wanting; fruit a 1-celled capsule or berry.

Stipules large and leaflike. Flowers terminal..... *Prockia.*

Stipules minute or absent.

Fruit covered with long spinelike bristles. Leaves entire; flowers in panicled racemes..... *Oncoba.*

Fruit unarmed.

Leaves 3-nerved.

Flowers in panicles..... *Hasseltia.*

Flowers in spikes..... *Lunania.*

Leaves penninerved.

Petals present; flowers in long racemes..... *Homalium.*

Petals none; flowers not in racemes.

Flowers dioecious; plants usually armed with spines. *Xylosma.*

Flowers perfect; plants unarmed.

Sepals distinct, reflexed; staminodia none..... *Laetia.*

Sepals overlapping, not reflexed; staminodia present.

Style present; stamens 6–15; fruit usually 1 cm. or less in diameter..... *Casearia.*

Style none; stamens numerous; fruit 2.5 cm. in diameter or larger..... *Zuelania.*

CASEARIA Jacq.

Shrubs or small trees; leaves usually with transparent dots or lines; flowers small, white, inconspicuous; petals none; stamens 6–15; fruit a 3–4-valved capsule, usually red at maturity, the seeds covered by a fleshy aril.

Stamens about 20; sepals 5–7..... *C. tremula.*

Stamens 6–15; sepals 5.

Flowers in stalked cymes or headlike clusters.

Stamens 8; flowers in stalked cymes..... *C. nitida.*

Stamens 10; flowers in stalked headlike clusters.... *C. arborea.*

Flowers in sessile clusters in the leaf axils.

Leaves entire or practically so..... *C. sylvestris.*

Leaves conspicuously toothed.

Leaves closely and regularly serrate..... *C. arguta.*

Leaves remotely crenate.

Leaves long-acuminate, lustrous beneath, opaque. *C. javitensis.*

Leaves obtuse or acutish, dull beneath, punctate. *C. aculeata.*

Casearia aculeata Jacq. *Escambrón* (Honduras). Thickets or open forest; Central America to northern South America. A tree 9 meters high, the trunk 10 cm. in diameter, the branchlets often thornlike; leaves mostly elliptic to ovate or obovate, glabrous or nearly so; flowers greenish white, 3 mm. long; fruit 8 mm. in diameter. Wood nearly white or yellowish, rather hard, fine-textured, straight-grained, tough, somewhat splintery, not durable; not utilized.

Casearia arborea (L. Rich.) Urban. In forest and thickets; Central America to Brazil; West Indies. A shrub or small tree,

as much as 9 meters high, with a trunk diameter of 10 cm.; leaves almost sessile, narrowly oblong, long-acuminate, finely serrate; fruit red, 1 cm. long, the aril red.

Casearia arguta HBK. *Guayabillo* (Guatemala). In thickets; Mexico to Colombia. A shrub or tree, up to 9 meters high, with a trunk 15 cm. in diameter; leaves lance-oblong, long-acuminate, pubescent beneath on the veins; fruit globose, more than 1 cm. in diameter.

Casearia javitensis HBK. In thickets; Mexico to South America. A shrub or tree 3–6 meters high, glabrous or nearly so; leaves oblong or lance-oblong, coriaceous; capsule 1 cm. long.

Casearia nitida (L.) Jacq. *Paletilla. Iximche* (Maya). Common in thickets; widely distributed in tropical America. A shrub or tree 1–10 meters high, the trunk as much as 15 cm. in diameter; leaves thin, elliptic to oblong, acute, almost glabrous; fruit red, 8mm. long. A common and rather weedy shrub in Central America.

Casearia sylvestris Swartz. *Wild Sage.* Frequent in thickets; widely distributed in tropical America. An almost glabrous shrub or small tree, sometimes 6 meters high, with a trunk 10 cm. in diameter, the branches slender; leaves small, oblong or lance-oblong, long-acuminate; fruit 3–4 mm. long. One of the commonest shrubs of Central America. Wood pale brown, hard, heavy, strong, fine-textured, finishes smoothly; not utilized, but suitable for small handles.

Casearia tremula Griseb. In forest, Esperanza, *Schipp* S722; Mexico to northern South America. A tree of 12 meters, the trunk 25 cm. in diameter; leaves elliptic or oval, glabrous, crenate or almost entire; flowers fascicled, on long slender pedicels; fruit 1–1.5 cm. in diameter.

HASSELTIA HBK.

Hasseltia dioica (Benth.) Sleumer. *Quina* (Guatemala). *H. mexicana* Standl. In forest; southern Mexico to Honduras. A shrub or tree, up to 9 meters high; leaves petioled, oblong or oblanceolate-oblong, 3-nerved, acute or acuminate, irregularly serrate, glabrous or nearly so; flowers small, white, in dense terminal panicles; stamens very numerous; capsule globose, 5–6 mm. in diameter, minutely pubescent. A showy tree when in flower. Wood yellowish brown, moderately hard and heavy, fine-textured, cross-grained, splintery; not utilized.

HOMALIUM Jacq.

Homalium riparium Standl. Carnegie Inst. Wash. Publ. 461: 74. 1935. Type from river bank, Río Grande, *Schipp* 1182. A tree of 10 meters, the trunk 20 cm. in diameter; leaves oblong-lanceolate, 7–12 cm. long, acuminate, serrate, dentate; racemes long and slender, the flowers white, 4 mm. long; ovary densely hirsute.

LAETIA Loefl.

Laetia Thamnia L. Frequent in forest; Yucatan to Panama; West Indies. A glabrous shrub or small tree, sometimes 12 meters high, with trunk diameter of 30 cm.; leaves elliptic or elliptic-lanceolate, acuminate, crenate or almost entire, with pellucid dots and lines; flowers rather large, white, small inflorescences axillary; petals none; stamens numerous; fruit a globose berry 2–4 cm. in diameter.

LUNANIA Hook.

Lunania sessiliflora Standl. Carnegie Inst. Wash. Publ. 461: 74. 1935. Type collected in forest, Jacinto Hills, *Schipp* S606. A glabrous tree of 6 meters, the trunk 7 cm. in diameter; leaves short-petiolate, ovate, 5–8 cm. long, acute, serrate; flowers numerous, minute, in simple, axillary and terminal spikes.

ONCOBA Forsk.

Oncoba laurina (Presl) Warb. In forest or thickets; rare; Mexico (?) to Colombia. A tree 6–9 meters high; leaves long-petiolate, oblong to narrowly ovate, 12–30 cm. long, long-acuminate, glabrous; flowers small, white, in panicled terminal racemes; fruit globose, 1 cm. in diameter, covered with long soft spines. Wood yellowish brown, hard, heavy, fine-textured, straight-grained, not durable; not utilized.

PROCKIA L.

Prockia crucis L. Occasional in broken ridge; widely distributed in tropical America. A shrub or small tree; stipules large and foliaceous; leaves slender-petiolate, ovate, acuminate, thin, serrate, pubescent; flowers clustered at the ends of short branchlets or in short racemes, without petals; stamens very numerous; fruit baccate, 6 mm. in diameter.

XYLOSMA Forst.

Shrubs or small trees, the trunk usually armed with large branched spines; leaves short-petioled, crenate or almost entire;

flowers minute, fascicled in the leaf axils or in short racemes; petals none; stamens numerous; fruit a small 2–8-seeded berry.

Leaves leathery, obtuse to rounded at the apex, glabrous. *X. anisophylla.*

Leaves thin, acute or acuminate, pubescent beneath. *X. characantha.*

Xylosma anisophylla Standl. Honey Camp; Cornhouse Creek; Yucatan and Campeche. A glabrous shrub or small tree; leaves small, variable in form, oblanceolate to broadly ovate, serrate or almost entire; fruit glabrous.

Xylosma characantha Standl. Field Mus. Bot. 11: 136. 1932. Type from El Cayo, *Bartlett* 12004; Petén, Guatemala. A shrub a meter high, the slender branches armed with slender spreading spines; leaves almost sessile, ovate-elliptic; fruit pilose.

ZUELANIA A. Rich.

Zuelania Guidonia (Swartz) Britt. & Millsp. *Z. Roussoviae* Pittier. *Water-wood. Sangre de Playa, Palacio* (Honduras). *Tamay* (Yucatan, Maya). All Pines, Belize, and elsewhere; Mexico to Panama; West Indies. A tree 13 meters high, the trunk 15–20 cm. in diameter; leaves oblong or narrowly oblong, 15–25 cm. long, acute or acuminate, inconspicuously serrate, densely soft-pubescent beneath; flowers small, whitish, in dense lateral clusters; fruit a fleshy capsule 3.5 cm. in diameter. Wood yellow, moderately hard, tough, fine-textured, not durable; not utilized.

TURNERACEAE. Turnera Family

Herbs, shrubs, or small trees; leaves alternate, toothed, with stipules; flowers chiefly axillary, regular, perfect, with 5 sepals or calyx lobes and 5 fugacious petals; stamens 5, distinct; fruit a capsule, 3-valved, 1-celled, many-seeded.

Trees or tall shrubs; flowers 7–8 cm. long..... *Erblichia.*

Herbs or low shrubs; flowers rarely as much as 2.5 cm. long.

Pubescence of branched hairs; plants annual..... *Piriqueta.*

Pubescence of simple hairs; plants annual or perennial... *Turnera.*

ERBLICHIA Seem.

Erblichia odorata Seem. *Butterfly Tree. Conop* (Guatemala). Crique Negra, *Balderamos* 4 (Yale 14881); southern Mexico to Panama. A small or medium-sized tree; leaves short-stalked,

lanceolate to oblong-elliptic, sparsely pubescent beneath, inconspicuously crenate; flowers long-pedicellate, bright yellow; capsule 4 cm. long. The tree is a remarkably handsome and conspicuous one when in flower. It sometimes is referred to the genus *Turnera*, perhaps justly so. Wood brownish, rather hard, tough, fine-textured; not utilized. (See *Trop. Woods* 11:4.)

PIRIQUETA Aubl.

Piriqueta cistoides (L.) Meyer. Honey Camp.

TURNERA L.

Herbs or shrubs with small toothed leaves; flowers axillary; calyx tubular or campanulate, with 5 narrow lobes; petals short-clawed.

Leaves with two conspicuous glands on the petiole or at the base of the blade; flowers pedicellate, the pedicel united with the petiole ..... *T. ulmifolia.*

Leaves without large glands; flowers sessile ..... *T. diffusa.*

Turnera diffusa Willd. *Damiana* (Yucatan). El Cayo and elsewhere; widely distributed in tropical America. A slender much-branched shrub, 1 meter high or less, with small leaves and small yellow flowers. In Mexico the plant has a high reputation because of supposed aphrodisiac properties attributed to it. These have not been confirmed by scientific investigation.

Turnera ulmifolia L. Frequent in pine ridge; widely distributed in tropical America. An herb or a low shrub with bright yellow flowers. The local specimens represent at least three distinct forms, but throughout its wide range the plant exhibits such great variation that it scarcely seems worth while to give names to the forms occurring in British Honduras.

PASSIFLORACEAE. Passion-flower Family

Herbaceous or somewhat woody vines, often with handsome flowers. *Passiflora ligularis* and *P. quadrangularis* are cultivated commonly in Central America for their edible fruits, those of the former species being of excellent quality.

PASSIFLORA L.

Passiflora ambigua Hemsl. Machaca, *Schipp* 1302, S466.

Passiflora biflora Lam. *Media-luna* (Honduras).

Passiflora brevipes Killip, ined. Type from Jacinto Hills, *Schipp* 1304.

Passiflora Brighami Wats.

Passiflora choconiana Wats.

Passiflora ciliata Ait. *Passion-vine. Pasionaria* (Yucatan). *Pochkak* (Yucatan, Maya).

Passiflora coriacea Juss. *Xicozotz* (Petén, Maya). Easily recognized by its peltate leaves.

Passiflora foetida L. *Granadilla* (Honduras). *Tuuboc* (Yucatan, Maya).

Passiflora foetida var. **nicaraguensis** Killip. *Passion-flower. Melón de Ratón.*

Passiflora guatemalensis Wats.

Passiflora Hahnii Fourn. Collected by Lundell.

Passiflora laurifolia L.

Passiflora obovata Killip, ined. Type from Camp 35, Guatemalan boundary, *Schipp* S713.

Passiflora Rovirosae Killip. Collected by Lundell.

Passiflora sericea L.

Passiflora serratifolia L. *Jujito amarillo* (Campeche).

Passiflora suberosa L. *Coceh* (Yucatan, Maya). Belize-Sibun Road, *Gentle* 23.

CARICACEAE. Papaw Family

CARICA L.

Trees or large shrubs, the trunk simple or branched; leaves simple or digitately compound, without stipules, alternate, long-stalked; sap milky; flowers usually dioecious, the pistillate solitary and axillary or in few-flowered panicles; calyx small, 5-lobed; staminate corolla with an elongate tube, the limb 5-lobed; stamens 10, inserted in the corolla throat; fruit large, baccate.

Leaves simple but deeply lobed.....*C. Papaya.*

Leaves digitately compound, with 3–5 leaflets.....*C. dolichaula.*

Carica dolichaula Donn. Smith. In forest; southward to Panama. A glabrous branched tree as much as 11 meters high, the trunk 20 cm. in diameter or thicker; leaflets entire, with slender tail-like tips, short-stalked; inflorescences few-flowered; fruits small. In spite of the rather wide distribution of this tree, little is known

concerning it. It is, apparently, the *Palo de Barril* of western Costa Rica, which develops smooth trunks as much as a meter in diameter. Although so large, it is said they may be cut down with only a few strokes of a machete. The cylinders of bark removed from sections of the trunk are used there for making rough casks in which grain is stored.

Carica Papaya L. *Papaw. Papaya. Put* (Maya). Cultivated commonly, and also naturalized; widely distributed in tropical America, at least in cultivation. Trunk simple in normal specimens; lobes of the leaves deeply lobed and toothed. One of the favorite fruits of tropical America. The milky sap contains a substance resembling animal pepsin in its action, and for this reason the fruit is commonly believed to aid digestion.

LOASACEAE. Loasa Family

MENTZELIA L.

Mentzelia aspera L. Corozal District, *Gentle* 849.

BEGONIACEAE. Begonia Family

BEGONIA L.

Begonia glabra Aubl. An herbaceous vine.

Begonia heracleifolia Cham. & Schlecht. Pueblo Viejo, *Schipp* S695. An acaulescent plant with deeply lobed leaves; often cultivated for ornament in Central America and the United States.

Begonia nicaraguensis Standl. An acaulescent plant, the leaves not lobed.

CACTACEAE. Cactus Family

CEREUS L.

Cereus minutiflorus (Britt. & Rose) Vaupel. Forest Home, *Schipp* S411.

Cereus pentagonus L. New Town, climbing in mangroves, *Schipp*. A large vine with 3–5-angled stems; flowers very large, creamy white, fragrant; fruit large, red, edible.

Probably other species of *Cereus* occur in British Honduras, besides various species of genera not listed here, particularly *Opuntia* and *Nopalea*.

EPIPHYLLUM Haw.

Epiphyllum crenatum (Haw.) G. Don. Honey Camp. An epiphytic plant.

Epiphyllum pumilum (Vaupel) Britt. & Rose. Middlesex, *Schipp.*

RHIPSALIS Gaertn.

Rhipsalis Cassutha Gaertn. Middlesex, *Schipp.* An epiphytic plant.

Rhipsalis coriacea Polak. Middlesex, *Schipp* S23.

LYTHRACEAE. Loosestrife Family

AMMANNIA L.

Ammannia coccinea Rottb. Corozal-Orange Walk Road. *Gentle* 71, 4929. A plant of wet soil.

CUPHEA Adans.

Cuphea axilliflora Koehne. Camp 35, Guatemalan boundary, *Schipp* S634.

Cuphea calophylla Cham. & Schlecht.

Cuphea carthagenensis (Jacq.) Macbride.

Cuphea utriculosa Koehne. Growing usually in shallow water at the edges of streams.

Cuphea Wrightii Gray. Maskall Pine Ridge, *Gentle.* The specific determination is doubtful, the plant perhaps representing an undescribed species.

LAWSONIA L. Henna

Lawsonia inermis L. *Reseda* (general in Central America). Planted for ornament; native of Asia and Africa. A shrub or small tree with small, very fragrant, greenish flowers.

ROTALA L.

Rotala ramosior (L.) Koehne. Forest Home, *Schipp* S492. A plant of wet soil.

PUNICACEAE. Pomegranate Family

PUNICA L.

Punica Granatum L. *Pomegranate. Granado.* Sometimes planted for its edible fruit. Native of the Mediterranean region.

LECYTHIDACEAE. Brazil-nut Family

GUSTAVIA L.

Gustavia integrifolia Standl. *Genip. Jagüillo* (Honduras). Temash River; Río Grande; also in Honduras and Nicaragua. A tree of 10 meters, the trunk 25 cm. in diameter, with few branches; leaves very large, mostly clustered near the ends of the branches, alternate, elongate-spatulate, acute, entire, long-tapering toward the sessile base, glabrous or nearly so; flowers about 3 cm. broad, white, in short racemes, with 4 petals and numerous stamens. Wood yellow, rather light, fairly hard, coarse-textured. The flowers and the fleshy fruits are clustered along the trunk and larger branches. This tree is the most northern representative of its family, whose center of distribution is in the Amazon Valley.

RHIZOPHORACEAE. Mangrove Family

Shrubs or trees, glabrous or nearly so; leaves opposite, short-stalked, with stipules; flowers perfect, with valvate sepals, 3–4 petals, and 4–30 stamens; fruit leathery, indehiscent or only tardily opening.

Calyx 4-parted; fruit 1-seeded; leaves very thick, obtuse. *Rhizophora.*
Calyx 4–5-lobed; fruit 3-seeded; leaves thin, acuminate. *Cassipourea.*

CASSIPOUREA Aubl.

Cassipourea podantha Standl. *Water-wood.* Common in forest and thickets; southward to Panama. An almost glabrous shrub or tree as much as 9 meters high, with trunk diameter of 15 cm.; leaves small, oblong to elliptic, entire or obscurely toothed; flowers small, whitish, clustered in the leaf axils on very short stalks, the petals hairy; fruit leathery, about 7 mm. long, rounded at the apex and tipped with the persistent slender style. Thick sapwood yellowish, heartwood pale brown; moderately hard, heavy, tough, strong, splintery, rather fine-textured, finishes smoothly, is fairly durable; used locally for railway crossties and house frames.

RHIZOPHORA L. Mangrove

Rhizophora Mangle L. *Red Mangrove. Mangle Colorado. Tapche* (Yucatan, Maya). Common in coastal swamps, often forming large dense thickets; general on tropical American shores. A small or medium-sized tree with thin, brownish gray, shallowly furrowed bark, and often numerous stilt roots; leaves short-stalked,

dark green; flowers few, in the leaf axils, stalked, the 4 narrow petals yellowish white; fruit conic, leathery, 2–2.5 cm. long. The most characteristic tree of tropical shores. The seed usually germinates on the tree, the radicle becoming 25–30 cm. long before the seed falls from the tree and takes root in the mud. The conspicuous prop roots usually are exposed at high tide, when the oysters and other marine animals may be seen attached to them. Mangrove trees are of great importance in land building, for their roots hold mud and debris brought down by streams, gradually pushing seaward and forming new land. Charcoal obtained from mangrove wood usually is considered the best of all for kitchen use. The bark is used in the North for tanning hides. The young shoots often are employed in Central America for dyeing leather and other articles. Wood red or reddish brown, very hard, heavy, strong, fine-textured, durable; used for fuel and charcoal and to some extent for construction. (See *T. of T. A.*, pp. 472–474.)

COMBRETACEAE. Combretum Family

Shrubs or trees, sometimes climbing; leaves opposite or alternate, entire, without stipules; flowers in heads, spikes, or racemes; calyx lobes 4–5, valvate in bud; corolla of 4–5 petals or absent; stamens twice as many as the calyx lobes, inserted on the limb or base of the calyx; fruit dry or drupaceous, indehiscent, 1-celled, 1-seeded.

Flowers in dense globose conelike heads. Leaves alternate. *Conocarpus.*

Flowers in spikes or racemes.

Leaves alternate; petals none.

Calyx limb deciduous; branches unarmed..... *Terminalia.*

Calyx limb persistent; branches usually armed with spines. *Bucida.*

Leaves opposite; petals present.

Trees; leaves thick and fleshy; calyx limb persistent. *Laguncularia.*

Vines; leaves thin; calyx limb deciduous..... *Combretum.*

BUCIDA L.

Bucida Buceras L. *Bullet Tree, Bully Tree. Pucte* (Yucatan, Maya). Frequent in coastal swamps or thickets, commonly in association with mangroves; widely distributed in tropical America. A tree about 9 meters high, with a trunk 10 cm. in diameter, often

branched to the ground, almost glabrous, the branchlets often with 2–3 spines at the apex; leaves crowded at the ends of the branches, obovate or oblanceolate, obtuse or rounded at the apex; flowers small, in stalked spikes in the leaf axils; fruit an ovoid drupe 6 mm. long. The bark is employed in some regions for tanning. Wood dark brown to blackish, hard, heavy, tough, strong, fine-textured, takes a beautiful polish; resistant to decay; used locally for charcoal, fuel, and railway crossties.

COMBRETUM L.

Climbing shrubs, sometimes armed with spines; leaves opposite, petioled, entire; flowers small or large, in terete or one-sided spikes or racemes; calyx tube cylindric or angled, constricted above the ovary; petals 4–5, inserted between the calyx lobes; fruit leathery, 1-seeded, with 4–6 longitudinal wings or angles.

Flowers small, the limb of the calyx 2 mm. long; flower spikes not one-sided ..... *C. mexicanum.*

Flowers large, the calyx limb 5–15 mm. long; spikes one-sided.

Calyx limb 5 mm. long, with minute scattered scales; fruit broadly winged ..... *C. farinosum.*

Calyx limb 10–15 mm. long, sericeous; fruit sharply angled. *C. Cacoucia.*

Combretum Cacoucia Exell. *C. coccineum* Engler & Diels. Stann Creek Railway, in forest, *Schipp* 87; Central America to the Guianas. A large woody vine, sometimes 18 meters long, with a trunk diameter of 7 cm.; leaves oblong, acuminate, almost glabrous; flowers in long, stout, very dense, leafy-bracted racemes, the whole flower 2 cm. long. An exceedingly showy plant because of its abundance of spirelike spikes of bright, deep red flowers.

Combretum farinosum HBK. *Tietie, Carasow Comb.* Frequent in thickets or open forest; Mexico to Panama. A small or large vine; leaves oval to elliptic-oblong, with sparse or dense pale scales on the lower surface; spikes very dense and thick, the flowers varying from dark red to yellowish; fruit 2 cm. long. A showy, handsome plant, its flowers much visited by insects and hummingbirds.

Combretum mexicanum Humb. & Bonpl. Occasional in thickets; Mexico to Nicaragua. A large, woody vine; leaves oval to broadly oblong, obtuse to acuminate, glabrous or nearly so; flowers whitish, fragrant, in panicled spikes; fruit 2–2.5 cm. long.

CONOCARPUS L.

Conocarpus erecta L. *Buttonwood, Button Bush. Botoncillo* (Yucatan). *Kanche* (Yucatan, Maya). Common in mangrove swamps; tropical America and Africa. A shrub or small tree; leaves alternate, oval to lanceolate, acute or obtuse, usually glabrous or nearly so, with 2 small glands at the base; flowers very small, in dense conelike heads scarcely 1 cm. in diameter, these in terminal racemes and in the upper leaf axils. The bark is said to be rich in tannin. Wood olive-brown, heavy, hard, strong, fine-textured; the favorite fuel wood of the Colony.

LAGUNCULARIA Gaertn.

Laguncularia racemosa (L.) Gaertn. *White Mangrove. Mangle Blanco. Zacolcom* (Yucatan, Maya). Common in mangrove swamps; general in tropical America. A shrub or small tree with thin, reddish brown bark; leaves opposite, oblong to oval, rounded at the apex, leathery, glabrous, the petiole with 2 large glands; flowers small, in clustered spikes, the silky calyx 2–3 mm. long; fruit a leathery 10-ribbed drupe 1.5 cm. long. Wood yellowish brown, moderately heavy and hard, strong, medium-textured, not very durable; used for fuel.

TERMINALIA L.

Large or medium-sized trees; leaves alternate, often crowded at the ends of the branches; flowers small, greenish, in long slender spikes; stamens 8–10; petals none; fruit drupaceous or dry, sometimes winged.

Fruit winged, small; leaves acute or acuminate.....*T. obovata.*

Fruit not winged; leaves usually rounded and abruptly short-pointed at the apex.....*T. Catappa.*

Terminalia Catappa L. *Almond. Almendro* (Central America). Planted as a shade tree and also naturalized; native of the Old World tropics. A medium-sized tree with whorled branches; leaves 20–30 cm. long, obovate, usually with a gland on each side of the base of the midrib; fruit compressed, sharp-edged, 4–6 cm. long. The Indian Almond is one of the most popular shade trees of Central America, especially near the sea, where it thrives in sandy and saline soil. The leaves usually become brightly tinged with red and bronze before they fall. The kernels of the seeds are edible.

Terminalia obovata (R. & P.) Steud. *Nargusta. Guayabo. Canxun* (Guatemala, Maya). Frequent in forest; southern Mexico

to South America. A large or medium-sized tree, the young parts brown-hairy; leaves obovate or oblanceolate, 8–14 cm. long; flowers greenish; fruit usually less than 1 cm. long, hard, bearing several thin broad wings. There is some question regarding the species name of this tree. The Central American trees of the genus are in a chaotic state, because the available material of them is quite inadequate for their proper understanding. Thick sapwood light olive, heartwood darker and sometimes streaked with red or brown; moderately hard, tough, strong, and durable, not very difficult to work, finishes smoothly and presents a very attractive appearance; used locally for bridge and car timbers, railway crossties, and paneling; exported to a small extent for veneers.

MYRTACEAE. Myrtle Family

Shrubs or small trees; leaves opposite, entire, without stipules, conspicuously dotted with oil glands; flowers mostly small, perfect, regular, subtended by 2 bractlets; calyx 4–5-lobed or circumscissile as a cap; petals 4 or 5, mostly white; stamens numerous; fruit a 1-seeded drupe or a many-seeded berry. Wood brownish or light purplish, hard, heavy, tough, fine-textured, inclined to warp, not highly durable; little utilized.

Calyx limb closed in bud, in flower cleft longitudinally or circumscissile and falling off as a cap.

Calyx limb circumscissile, falling off as a cap; petals 1–2 or none. *Calyptranthes.*

Calyx limb irregularly lobed in flower, persisting; petals 4–5. *Psidium.*

Calyx limb open in bud, or the sepals imbricated.

Embryo coiled, the radicle elongated..... *Pimenta.*

Embryo not coiled, the cotyledons and radicle folded together, the radicle often very short.

Radicle very short; flowers variously arranged but not in panicles..... *Eugenia.*

Radicle elongate; flowers in loose panicles..... *Myrcia.*

CALYPTRANTHES Swartz

Trees or shrubs; flowers small, white, in axillary and terminal cymes or panicles; fruit baccate, 2–3-celled, usually 1–2-seeded.

Leaves sessile or essentially so, cordate and clasping at the base. *C. Bartlettii.*

Leaves distinctly stalked, not clasping.

Leaves 10–12 cm. wide.....*C. megistophylla.*
Leaves all or mostly less than 6 cm. wide.
Leaves rounded or subcordate at the base.....*C. Karlingii.*
Leaves acute at the base.
Young branches sparsely appressed-pilose...*C. Millspaughii.*
Young branches densely pilose with spreading hairs. *C. Chytraculia.*

Calyptranthes Bartlettii Standl. Field Mus. Bot. 11: 136. 1932. Type collected along stream, Mountain Pine Ridge, El Cayo District, *Bartlett* 11837; Monkey Falls, El Cayo, *Bartlett* 11458. A shrub 0.5–3.5 meters high; leaves very narrowly oblong, elongate, attenuate to an obtuse tip, rusty-tomentose beneath when young, becoming glabrous, with very numerous slender nerves almost perpendicular to the midrib; panicles rather large and many-flowered, rusty-villous; fruit almost 1 cm. in diameter, globose, red or purple.

Calyptranthes Chytraculia (L.) Swartz. Temash River; Belize River; also in the West Indies. A shrub or small tree with slender branches; leaves lance-oblong to elliptic, acuminate, glabrous; flowers white, fragrant.

Calyptranthes Karlingii Standl. Field Mus. Bot. 8: 29. 1930. Type from Tower Hill Estate, *Karling* 39; Maskall, *Gentle* 1268. Almost wholly glabrous; leaves oblong or lance-oblong, narrowed to an obtuse apex, with very numerous lateral nerves; flower buds brown-sericeous.

Calyptranthes megistophylla Standl. Carnegie Inst. Wash. Publ. 461: 75. 1935. Type from Camp 32, Guatemalan boundary, *Schipp* 1265. A tree of 15 meters, the trunk 30 cm. in diameter, glabrous or nearly so; leaves short-petioled, narrowly oblong, as much as 35 cm. long.

Calyptranthes Millspaughii Urban. *Walk-naked. Indio Desnudo.* Honey Camp; Freshwater Creek; Cozumel Island. A shrub or small tree; leaves oblong to elliptic, acuminate, glabrous, with oblique nerves; flower buds sparsely brownish-sericeous.

EUGENIA L.

Shrubs or small trees; flowers white or whitish, small or large, axillary or terminal; calyx lobes 4–5, persisting at the apex of the fruit; ovary 2–3-celled, the fruit often containing a single seed. The genus is represented more extensively in British Honduras than in

most other parts of Central America, another indication, probably, of the relationship of the flora with that of the West Indies, where the group is exceptionally well represented.

Inflorescence densely whitish-sericeous, tomentose, or pilose with somewhat elongate, more or less spreading hairs.

Inflorescence conspicuously stalked; pubescence of the inflorescence of closely appressed or subappressed hairs.

Leaves very narrowly lance-oblong, long-acuminate. . *E. biflora.*

Leaves elliptic to oval.

Flowers in cymes. . . . . *E. fragrans.*

Flowers not in cymes.

Fruit oblong or oval. . . . . *E. Fadyenii.*

Fruit globose. . . . . *E. yucatanensis.*

Inflorescences sessile or nearly so, the pubescence of more or less spreading hairs.

Leaves rounded or very obtuse at the apex. . . . . *E. mayana.*

Leaves acute or acuminate.

Leaves pubescent. . . . . *E. origanoides.*

Leaves glabrous. . . . . *E. bumelioides.*

Inflorescence glabrous or very minutely puberulent.

Leaves lance-linear, 1 cm. wide or less. . . . . *E. belizensis.*

Leaves oblong to elliptic, broader.

Leaves very pale beneath.

Petioles slender; veins conspicuous on the lower leaf surface. *E. xalapensis.*

Petioles thick and stout; veins obscure or obsolete on the lower leaf surface. . . . . *E. Schippii.*

Leaves of almost the same shade of green on both surfaces, not pale beneath.

Leaves rounded at the apex; flowers fascicled. *E. Winzerlingii.*

Leaves acuminate to obtuse; flowers in short racemes.

Pedicels elongate, mostly 7–10 mm. long. . . . . *E. vincentina.*

Pedicels short, 5 mm. long or less.

Leaves long-acuminate, not yellowish when dried, thin. *E. Capuli.*

Leaves obtuse or acutish, yellowish when dried, thick. *E. flavifolia.*

Eugenia belizensis Standl. Field Mus. Bot. 11: 137. 1932. Type from Mountain Pine Ridge, along brook, El Cayo District, *Bartlett* 11756. A shrub 3 meters high with slender branches, glabrous; leaves short-petioled, acute at the base, long-attenuate to the apex, green; pedicels apparently solitary.

Eugenia biflora DC. Stann Creek Valley; Belize-Sibun Road; West Indies. A shrub or tree up to 9 meters high, the trunk sometimes 10 cm. in diameter; leaves short-petiolate, thick, pale, sparsely silky beneath; racemes few-flowered, densely pilose, the pubescence white or brownish.

Eugenia bumelioides Standl. Carnegie Inst. Wash. Publ. 461: 75. 1935. Type from Camp 32, Guatemalan boundary, 640 meters, *Schipp* 1279. A tree 7.5 meters high, the trunk 10 cm. in diameter; leaves ovate or elliptic-ovate, 5–6 cm. long, abruptly caudate-acuminate, acute or decurrent at the base; flowers fascicled in the leaf axils, ferruginous-tomentose.

Eugenia Capuli (Schlecht. & Cham.) Berg. *Walk-naked. Indio Desnudo, Granada Cimarrona, Cacho de Venado, Vaina de Espada.* Common in forest and thickets; Mexico and Central America. A glabrous shrub or small tree, sometimes 7.5 meters high, with a trunk 20 cm. in diameter; leaves small, chiefly lance-oblong or oblong-lanceolate, acute at the base, with a long narrow blunt tip; flowers very small, often forming dense clusters; fruits small, red or black when ripe.

Eugenia Fadyenii Krug & Urban. New Town, Stann Creek, in mangrove swamps; Jamaica. A tree 9 meters high, the trunk 10 cm. in diameter; leaves rather large, pale when dried, slender-petiolate, sparsely sericeous when young but in age glabrous or nearly so; flowers in elongate white-sericeous racemes; fruit 1 cm. long or often much larger, red or black.

Eugenia flavifolia Standl. Field Mus. Bot. 8: 320. 1931. Type from Stann Creek Railway, swampy places, *Schipp* 450; Cornhouse Creek, Manatee River, *Bartlett* 11293. An almost glabrous shrub or small tree, up to 7.5 meters high, the trunk up to 10 cm. in diameter; leaves lustrous, short-stalked, oblong to oblong-ovate, acute at the base; flowers in short dense racemes, white, fragrant; fruit dark red.

Eugenia fragrans (Swartz) Willd. Camp 33, Guatemalan boundary, *Schipp* 1240; West Indies, Mexico, Guatemala, and Honduras. A tree 10 meters high, the trunk 15 cm. in diameter; leaves coriaceous, elliptic-oblong to obovate or elliptic, 3–7 cm. long,

obtuse to rounded at the apex, glabrous; cymes with 3 or few flowers, the flowers white, fragrant.

Eugenia mayana Standl. *Sacloob* (Yucatan, Maya). Caves, Stann Creek Railway, limestone hilltops, *Schipp* 427; Yucatan. A tree 9 meters high, the trunk 12 cm. in diameter; leaves small, almost sessile, oblong or oblong-obovate, acute at the base, pubescent, especially on the upper surface; fruit red.

Eugenia origanoides Berg. New Town, open places along beach, *Schipp* 820; Mexico and Guatemala. A shrub 2.5 meters high; leaves rather small, oblong-elliptic, pubescent, obtuse or acutish at the base; fruit small, black.

Eugenia Schippii Standl. Field Mus. Bot. 11: 137. 1932. Type from Seine Bight, open forest, *Schipp* 669, also No. S141; Little Mountain Pine Ridge, El Cayo District, *Bartlett* 13060. A glabrous shrub or small tree, as much as 9 meters high, with trunk diameter of 10 cm.; leaves oblong, acuminate, acute or obtuse at the base, thick; flowers solitary or fascicled; fruit large, black.

Eugenia vincentina Krug & Urban. Cocquericot, *Bartlett* 12064; Guatemala, West Indies. A slender shrub; leaves ovate or broadly elliptic, small, acuminate, acute or very obtuse at the base, thin, glabrous; inflorescences lax, few-flowered, the flowers rather large. I have seen no material of this species from St. Vincent, the type locality, and do not know whether the Central American specimens are truly conspecific.

Eugenia Winzerlingii Standl. Trop. Woods 11: 20. 1927. *Ginger Guava.* Type from Orange Walk District, *Winzerling* VIII.7; Freshwater Creek Reserve, Sibun River, Honey Camp. A shrub or small tree, as much as 6 meters high, with a trunk 20 cm. in diameter; leaves almost sessile, leathery, oblong to elliptic or obovate, glabrous; flowers solitary or fascicled; fruit large, red.

Eugenia xalapensis (HBK.) DC. Middlesex; Belize-Sibun Road; southern Mexico. A shrub or tree 4–9 meters high with slender branches; leaves rather small, oblong-elliptic, obtuse-acuminate, acute or obtuse at the base, lustrous and bright green on the upper surface, glabrous; flowers rather large, in short racemes.

Eugenia yucatanensis Standl. *Blossom Berry.* Hillbank, *Brown* 27; Yucatan. A tree 12 meters high, the trunk 25 cm. in diameter; leaves slender-petiolate, elliptic, bluntly long-acuminate, acute at the base, glabrous above, sparsely sericeous or almost glabrous beneath; racemes elongate, silky.

MYRCIA DC.

Myrcia Oerstediana Berg. All Pines, El Cayo District; Guatemala to Panama. A tree 4.5–6 meters high, with slender brownish-hairy branches; leaves on very short petioles, oblong or lance-oblong, bluntly acuminate, obtuse at the base, more or less silky-hairy, especially beneath, conspicuously veined; flowers white, in lax, axillary and terminal, small panicles; fruit purple-red, globose, 6–8 mm. in diameter. The fruit is edible, with a somewhat acid, spicy, agreeable flavor.

PIMENTA Lindl.

Pimenta officinalis Lindl. *Allspice, Pimento. Pimienta Gorda.* Cultivated and perhaps native; southern Mexico. A tree 5–9 meters high, with pale brown, scaling bark and dense crown; leaves petioled, oblong or oval-oblong, large, obtuse, glabrous or nearly so; flowers small, white, silky-pubescent, in small, mostly axillary cymes; fruit 1–2-seeded, globose, 4–8 mm. in diameter. The tree is planted extensively in some regions as the source of the allspice of commerce, which consists of the dried unripe berries. All parts of the tree have a most delightful fragrance, that is retained indefinitely even in old herbarium specimens.

PSIDIUM L. Guava

Trees or shrubs; flowers often large, the peduncles axillary, 1–3-flowered; calyx limb 4–5-lobed, the lobes partly or wholly united in bud; petals 4–5, spreading, white; fruit a globose or pear-shaped berry, usually large and 4–5-celled.

Leaves glabrous, long-acuminate, less than 2 cm. wide. *P. Sartorianum.*

Leaves more or less pubescent, not long-acuminate, much wider.

Nerves of the leaves usually 12 or more pairs, parallel and close together; a large shrub or a tree..... *P. Guajava.*

Nerves of the leaves usually fewer than 10 pairs, remote; low shrubs, less than a meter high.

Leaves rounded, about as broad as long, broadly rounded or truncate at the base..... *P. rotundifolium.*

Leaves mostly obovate or elliptic, much longer than broad, acute to obtuse at the base.

Leaves whitish beneath, covered with a dense tomentum. *P. hypoglaucum.*

Leaves green beneath.

Leaves obtuse, not apiculate, sparsely pilose on the lower surface with long lax pale hairs.....*P. Schippii.*

Leaves rounded and apiculate at the apex, sparsely and inconspicuously sericeous beneath with closely appressed hairs.....*P. chrysobalanoides.*

Psidium chrysobalanoides Standl. Field Mus. Bot. 8: 319. 1931. Type from All Pines, open places, *Schipp* 596. A stout shrub 60 cm. high; leaves almost sessile, coriaceous, obovate or rounded-obovate, 4.5–7 cm. long; fruit sparsely puberulent or almost glabrous.

Psidium Guajava L. *Guava. Guayaba. Pichi, Putah, Coloc* (Maya). Cultivated and also wild in thickets; widely distributed in tropical America. A shrub or small tree with scaly, pale brown bark; leaves short-petioled, acute or obtuse, oblong; petals 1.5–2 cm. long. One of the favorite fruit trees of tropical America, its fruit eaten either raw or cooked, and often employed for making guava paste.

Psidium hypoglaucum Standl. Field Mus. Bot. 8: 320. 1931. Type from All Pines, open places, *Schipp* S99. A shrub 60 cm. high; leaves almost sessile, broadly obovate, obtuse or rounded at the apex; fruit yellow, 2 cm. in diameter.

Psidium rotundifolium Standl. Field Mus. Bot. 8: 318. 1931. Type from All Pines, open places, rare, *Schipp* S85. A shrub 60 cm. high; leaves 11–13 cm. long, broadly rounded or emarginate at the apex, leathery, glabrate; fruit 2.5 cm. long, yellow, acid.

Psidium Sartorianum (Berg) Niedenzu. *Half Crown. Pich-iche* (Yucatan, Maya). Belize-Sibun Road, *Gentle* 9; Mexico, Central America, Cuba. A slender tree, the trunk 15 cm. in diameter; leaves oblong-lanceolate, small, bright green, short-stalked; flowers white, solitary in the leaf axils, on long slender pedicels; fruit greenish yellow, 1.5–2 cm. in diameter. The fruit is edible, and is reported to have a rich spicy subacid flavor.

Psidium Schippii Standl. Field Mus. Bot. 8: 319. 1931. Type from All Pines, open places, *Schipp* 595. A shrub 60 cm. high; leaves obovate, 11–12 cm. long, leathery, with about 6 pairs of nerves; fruit yellow, tart, 2 cm. long.

MELASTOMACEAE. Melastome Family

Herbs, shrubs, or trees; leaves opposite or whorled, entire or toothed, the pubescence often of branched hairs; flowers perfect,

small or large and showy, with white, pink, yellow, or purple petals; stamens twice as many as the petals; style simple; calyx united with the ovary and fruit; fruit a 2–many-celled capsule or a berry. Except for the genus *Mouriria*, plants of this large tropical family are recognized easily by the form of their leaves, which have three or more longitudinal nerves extending from the base to the apex of the blade. The fruits of many members of the family are edible, but otherwise the group is of little economic importance.

Herbs; fruit a capsule.

Stamens subequal, the anthers all of about the same size; connective of the anther not long-appendaged.

Ovary glabrous at its apex.....*Aciotis.*

Ovary setose at its apex.

Calyx lobes alternating with penicillate-stellate bristles.....*Pterolepis.*

Calyx lobes without intermediate bristles.....*Tibouchina.*

Stamens very unequal; connective of the larger anthers with 2 elongate appendages.

Petals acute.....*Nepsera.*

Petals obtuse.

Teeth of the calyx much shorter than the tube..*Arthrostemma.*

Teeth of the calyx equaling the tube or nearly so..*Acisanthera.*

Shrubs or trees; fruit baccate except in one genus.

Fruit a capsule; an epiphytic shrub.....*Adelobotrys.*

Fruit a berry; plants not epiphytic.

Leaves penninerved or 1-nerved.....*Mouriria.*

Leaves with 3 or more longitudinal nerves.

Petioles with large bladder-like appendages.

Appendages present at the base of the petiole; flowers axillary.....*Maieta.*

Appendages present at the apex of the petiole; flowers in terminal panicles.....*Tococa.*

Petioles without bladder-like appendages, but these rarely present on the leaf blade.

Inflorescence terminal.

Calyx limb closed in bud, separating as a lid..*Conostegia.*

Calyx limb open in bud, not separating.

Petals acute.....*Leandra.*

Petals obtuse.

Outer calyx lobes larger than the inner ones. A low shrub with hispid branches..... *Heterotrichum.*

Outer calyx lobes none or small and inconspicuous.

Stems and petioles covered with long thickened bristles..... *Tococa.*

Stems glabrous or hairy, not bristly..... *Miconia.*

Inflorescence lateral or axillary.

Leaves closely transverse-striolate between the primary nerves.

Filaments thickened; anthers short, obtuse... *Blakea.*

Filaments filiform; anthers elongate, beaked.. *Topobea.*

Leaves not striolate.

Petals acute.

Peduncles axillary; fruit often conspicuously ribbed. *Ossaea.*

Peduncles infra-axillary; fruit not ribbed. *Henriettella.*

Petals obtuse.

Inflorescences infra-axillary..... *Henriettea.*

Inflorescences axillary.

Anthers linear-subulate, with one pore at the apex. *Clidemia.*

Anthers short, obtuse, with 2 pores..... *Bellucia.*

ACIOTIS Don

Aciotis paludosa Triana. Mullins River Road, *Schipp* 46.

ACISANTHERA P. Br.

Acisanthera Bartlettii Gleason, Papers Mich. Acad. Sci. 17: 145. *pl. 19.* 1933. Type from Belize District, *Bartlett* 11260; All Pines, *Schipp* 677, 707.

Acisanthera quadrata Juss.

ADELOBOTRYS DC.

Adelobotrys adscendens (Swartz) Triana. *Tietie.* Temash River, *Kinloch* 50; southern Mexico to South America. An epiphytic shrub, sometimes subscandent, almost glabrous; leaves short-petiolate, broadly ovate or elliptic, 5-nerved, acute, rounded at the

base, entire; flowers white, in terminal panicles; fruit an oblong capsule.

ARTHROSTEMMA Ruiz & Pavón

Arthrostemma fragile Lindl.

Arthrostemma parvifolium Cogn. Jacinto Hills, *Schipp* S590.

BELLUCIA Neck.

Bellucia costaricensis Cogn. Occasional in forest; southward to Costa Rica. A tree 10 meters high, the trunk 12 cm. in diameter; leaves very large, broadly elliptic, thick, entire, 5-plinerved, short-acuminate, acutish or obtuse at the base, glabrous above, pubescent beneath; flowers large, white, in lateral clusters, fragrant; fruit a large berry. Wood creamy yellow, moderately hard, fine-textured, not durable; not utilized.

BLAKEA L.

Blakea cuneata Standl. Carnegie Inst. Wash. Publ. 461: 76. 1935. In forest, Río Viejo, *Schipp* S604, type; also Camp 32 on the Guatemalan boundary, *Schipp* 1237, and in Guatemala. A shrub or tree, as much as 7 meters high, the trunk 5–10 cm. in diameter; leaves petioled, narrowly elliptic-oblong, abruptly acuminate, triplinerved, scurfy-puberulent or almost glabrous; flowers axillary, pedicellate, subtended by large foliaceous bracts; petals pink, 1.5 cm. long.

CLIDEMIA Don

Slender, usually small and very hairy shrubs; leaves mostly ovate and 5–7-nerved, entire or toothed; flowers small and inconspicuous, in axillary panicles or clusters; calyx with 4–6 narrow outer lobes and often a series of very small inner ones; fruit a small juicy berry.

Flowers sessile in the leaf axils.....*C. rubra.*

Flowers in panicles or head-like stalked clusters.

Flowers few, in head-like bracted short-stalked clusters.
C. involucrata.

Flowers numerous, in usually lax panicles or in elongate interrupted spike-like inflorescences.

Flowers in interrupted spike-like inflorescences...*C. capitellata.*

Flowers in loose panicles.

Hairs of the calyx dilated at the base and stellate..*C. laxiflora.*

Hairs simple, not stellate.
Lobes of the calyx shorter than the tube.
Branches glandular-pilose.....*C. bullosa.*
Branches without gland-tipped hairs.....*C. Deppeana.*
Lobes of the calyx equaling or longer than the tube.
Leaves cordate or broadly rounded at the base...*C. hirta.*
Leaves obtuse to rounded at the base.
Leaves entire or nearly so; panicles scarcely longer than the petioles.....*C. dentata.*
Leaves conspicuously toothed; panicles usually much longer than the petioles.....*C. neglecta.*

Clidemia bullosa (Spreng.) Cogn. Machaca, swampy places in savanna, *Schipp* S583; ranging to Brazil. A shrub, densely covered with gland-tipped hairs; leaves 5-nerved, long-acuminate; flowers small, greenish.

Clidemia capitellata (Bonpl.) Don. Mullins River Road, edge of forest, *Schipp* 30; ranging to Brazil. A shrub a meter high; flowers white.

Clidemia dentata Don. In thickets; widely distributed in tropical America. A slender shrub 1–1.5 meters high; petals white; fruit blue.

Clidemia Deppeana Steud. Frequent in forest and thickets; southern Mexico and Central America. A small slender shrub with abundant viscid hairs; petals white; berries red, turning blue.

Clidemia hirta (L.) Don. Frequent in thickets; widely distributed in tropical America. A shrub a meter high.

Clidemia involucrata DC. Near Middlesex, mountain forest, *Schipp* 474; Guianas and Trinidad. A tree-like shrub 3 meters high; leaves finely dentate, long-acuminate, oblique at the base; flowers white; fruit black.

Clidemia laxiflora (Schlecht.) Walp. Mullins River Road, Manatee Pine Ridge, *Schipp* 80; southern Mexico and Central America. A shrub 2 meters high; leaves densely hairy, very long-acuminate.

Clidemia neglecta Don. In thickets; widely distributed in tropical America. A shrub about a meter high.

Clidemia rubra (Aubl.) Mart. Honey Camp; All Pines; Manatee Pine Ridge; tropical America. A low, stiff, often simple

shrub; leaves very densely hairy, small; petals pink; fruit red or black.

CONOSTEGIA Don

Shrubs or small trees, glabrous or pubescent; leaves petiolate, entire or toothed, 3–5-nerved; flowers small or of medium size, in terminal panicles; limb of the calyx closed in bud, separating as a cap and falling as the flowers open; fruit a small berry.

Leaves covered beneath with a fine and very dense, white or brownish tomentum ..... *C. xalapensis.*

Leaves green beneath.

Leaves glabrous ..... *C. subhirsuta.*

Leaves densely hairy ..... *C. caelestis.*

Conostegia caelestis Standl. Field Mus. Bot. 4: 318. 1929. Type from Big Creek, Mullins River Road, *Schipp* 63. A tree 7.5 meters high, the trunk 10 cm. in diameter; leaves oblong or elliptic-oblong, nearly entire, abruptly acuminate; panicles small and dense; petals white.

Conostegia subhirsuta DC. Mullins River Road, in forest; widely distributed in tropical America. A tree 7.5 meters high, with trunk diameter of 10 cm.; leaves narrow, acuminate, entire or nearly so; petals white.

Conostegia xalapensis (Bonpl.) Don. *Uva. Sirín* (Honduras). Occasional in thickets and open places; Mexico to Colombia. A large shrub or small tree, often with broad spreading crown; leaves oblong to ovate, toothed, 5-nerved, green and almost glabrous on the upper surface; flowers pink; fruit dark purple. The berries are sweet and of good flavor, suggestive of the huckleberries (*Gaylussacia*) of the United States. In some parts of Central America they are gathered in quantity for sale in the markets. This species is probably the most common melastome of Mexico and Central America, and also one of the handsomest. Wood brownish, moderately heavy and hard, rather fine-textured, is not durable; not utilized.

HENRIETTEA DC.

Henriettea succosa (Aubl.) DC. *Henriettella macrocalyx* Standl. Field Mus. Bot. 8: 31. 1930. Type of *H. macrocalyx* from Six Mile, Stann Creek Railway, *Schipp* 388; Jacinto Creek, *Schipp* 1184; Panama and South America. A tree 7 meters high with trunk 10 cm. in diameter, or smaller; branches appressed-

setose; leaves 5-plinerved, very rough on both surfaces; petals white or pink.

HENRIETTELLA Naud.

Shrubs or small trees; leaves mostly short-petiolate and more or less leathery, entire or nearly so, 3–5-nerved or triplinerved; flowers small, fasciculate, lateral or axillary; petals usually acute.

Leaves glabrous on the upper surface..... *H. densiflora.*

Leaves hairy on the upper surface.

Leaves and branches densely hirsute with very long hairs; leaf blades long-attenuate at the base..... *H. cuneata.*

Leaves and branches with very short hairs; leaf blades obtuse to acute at the base..... *H. fascicularis.*

Henriettella cuneata (Standl.) Gleason, Bull. Torrey Club 58: 75. 1931. *Maieta cuneata* Standl. Field Mus. Bot. 8: 30. 1930. Type from Middlesex, in dense forest along mountain stream, rare, *Schipp* 320. A shrub 3 meters high, the trunk 10 cm. in diameter, densely hirsute throughout; leaves with short linear tail-like tips; petals white; fruit orange. The leaves have on the upper surface near the base small hollow swellings or formicaria, that perhaps are inhabited by ants.

Henriettella densiflora Standl. Middlesex, in forest, *Schipp* 264; Honduras, Panama. A shrub 1.5 meters high; leaves long-acuminate, scurfy-pubescent beneath on the veins; petals white.

Henriettella fascicularis (Swartz) Triana. Stann Creek Valley, in forest, *Schipp* 59; West Indies. A tree 9 meters high, the trunk 12 cm. in diameter; leaves small, rough on the upper surface, acute or obtuse and apiculate; flowers minute, white.

HETEROTRICHUM DC.

Heterotrichum octonum (Humb. & Bonpl.) DC. In forest or thickets; widely distributed in tropical America. A shrub 2 meters high, the stems covered with very long, spreading, stiff, brown hairs; leaves broadly ovate, 7–9-nerved, cordate at the base, softly pubescent beneath with branched hairs; petals white; berries purple-black, covered with long gland-tipped hairs.

LEANDRA Raddi

Densely pubescent shrubs with long-petioled 5–7-nerved crenate-serrate leaves; flowers small, in open terminal panicles, the petals acute; fruit a small berry.

Pubescence of the branches of stellate hairs.....*L. costaricensis.*
Pubescence of the branches of stiff simple hairs.....*L. dichotoma.*

Leandra costaricensis Cogn. Near Middlesex, mountain forest, rare, *Schipp* 471; Costa Rica. A shrub 2 meters high; leaves very large, rounded-ovate or broadly elliptic, densely stellate-pubescent beneath; petals white; berries deep blue.

Leandra dichotoma (Don) Cogn. Mullins River Road, edge of forest, rare, *Schipp* 18; ranging to South America. A shrub 2 meters high; pubescence of red or brownish hairs; petals pink.

MAIETA Aubl.

Maieta tococoidea (DC.) Cogn. Near Middlesex, mountain forest, *Schipp* 470; Guatemala to South America. A shrub a meter high, the branches densely hirsute; leaves long-petiolate, thin, broadly ovate, finely crenate; petiole with 2 large bladder-like hollow swellings or formicaria at the base; flowers small, white, clustered in the leaf axils; berries black. The formicaria are inhabited by minute red ants.

MICONIA Ruiz & Pavón

Shrubs or small trees; leaves large or small, entire or dentate; flowers 4–9-parted, in terminal panicles; petals usually white; fruit a small edible berry, commonly blue, black, or purple. Woods mostly pale brown, moderately hard and heavy, fine-textured, not durable; not utilized. The local name Maya is applied to all or most of the species of this genus.

Leaves sessile and more or less clasping at the base.
  Leaves abruptly contracted near the base; anthers subulate. *M. amplexans.*
  Leaves not contracted near the base; anthers short-linear. *M. impetiolaris.*
Leaves petiolate, not clasping, the petiole sometimes margined.
  Leaves covered beneath with a close, very dense, brown or white tomentum or scurf.
    Leaves acute or acuminate at the base.
      Lateral nerves of the leaves arising far above the base of the blade.....*M. oligocephala.*
      Lateral nerves arising at the base of the blade.
        Leaves linear-lanceolate, 2–3 cm. wide....*M. chrysophylla.*
        Leaves broadly oblong to obovate or elliptic, mostly 6–14 cm. wide.

Flowers secund upon the recurved branches of the panicle.....*M. habrolepis.*

Flowers not secund, the branches of the panicle straight. *M. astroplocama.*

Leaves obtuse to cordate at the base.

Petioles 1 cm. long or shorter.

Bracts at the base of the calyx large and broad; leaves mostly 10–14 cm. wide.....*M. involucrata.*

Bracts minute; leaves 6 cm. wide or smaller..*M. albicans.*

Petioles 2–4 cm. long or longer.

Flowers conspicuously secund on the branches of the panicles; leaves mostly oblong.....*M. stenostachya.*

Flowers not secund.

Calyx and ovary together about 8 mm. long; flowers long-pedicellate.....*M. dodecandra.*

Calyx and ovary much smaller; flowers sessile or on very short pedicels.

Leaves long-acuminate, brownish beneath. *M. belizensis.*

Leaves very obtuse or acutish, whitish beneath. *M. argentea.*

Leaves glabrous or pubescent beneath but neither tomentose nor densely scurfy, green or purple.

Leaves purple-red beneath.....*M. oinochrophylla.*

Leaves green beneath.

Lateral nerves of the leaves arising well above the base of the blade.

Inflorescence spicate.....*M. nervosa.*

Inflorescence paniculate.

Leaves thinly hirsute on the upper surface, at least when young.....*M. ibaguensis.*

Leaves glabrous on the upper surface or practically so.

Petioles margined to the base.....*M. pteropoda.*

Petioles not margined to the base.

Leaves finely stellate-pubescent beneath, at least on the veins; branches of the inflorescence stellate-pubescent.

Leaves abruptly short-acuminate.....*M. obovalis.*

Leaves gradually long-attenuate....*M. Schlimii.*

Leaves glabrous beneath; branches of the inflorescence glabrous or nearly so.

Leaves mostly verticillate.....*M. longifolia.*

Leaves opposite.....*M. hondurensis.*

Lateral nerves of the leaves arising from the very base of the blade.

Inflorescence spike-like.....*M. angustispica.*

Inflorescence not spike-like.

Branches densely hirsute with long spreading hairs.

Leaves glabrous on the upper surface, acute at the base. *M. Mathaei.*

Leaves hirsute on the upper surface, rounded to cordate at the base.

Flowers spicate.....*M. aeruginosa.*

Flowers in cymes, secund upon the recurved branches.....*M. lacera.*

Branches glabrous or puberulent, sometimes inconspicuously hirsute at the nodes.

Inflorescence narrow, thyrse-like; petioles sometimes hirsute at the apex.

Petioles hirsute at the apex.....*M. ciliata.*

Petioles not hirsute.....*M. disparilis.*

Inflorescence broad, usually more or less pyramidal; petioles not hirsute.

Leaf blades rounded or very obtuse at the base, conspicuously 5-nerved.....*M. laevigata.*

Leaf blades acute at the base, essentially 3-nerved.

Ovary and calyx turbinate, acute at the base; panicles few-flowered.....*M. ochroleuca.*

Ovary and calyx campanulate, obtuse or rounded at the base; panicles large and many-flowered. *M. hyperprasina.*

Miconia aeruginosa Naud. *Maya.* Occasional in thickets; ranging to Venezuela. A shrub or small tree; leaves long-petiolate, ovate, broadly rounded or cordate at the base, long-acuminate, densely hirsute.

Miconia albicans (Swartz) Triana. Occasional in thickets; Mexico to West Indies and South America. A low shrub; branches white-tomentose; leaves leathery, oblong, acute, narrowly cordate at the base.

Miconia amplexans (Crueger) Cogn. Big Creek, along streams, *Schipp* 58; Central and South America. A tree 7.5 meters high, the trunk 10 cm. in diameter; leaves very large, broadly obovate, acuminate, minutely stellate-pubescent beneath, the lateral nerves arising far above the base of the blade; flowers small, white, panicled. The collector reports that the leaves are sometimes as much as 60 cm. long and 27 cm. wide.

Miconia angustispica Blake. Forest Home, in forest, *Schipp* S409; southward to Nicaragua. A shrub 2 meters high; leaves large, oblong-elliptic or obovate, abruptly acuminate, acute at the base, 3-nerved, glabrate.

Miconia argentea (Swartz) DC. *White Maya. Sirín.* Frequent in thickets; widely distributed in tropical America. A large shrub or a tree, sometimes 12 meters high, with a trunk 13 cm. in diameter; leaves very large, entire or nearly so, white beneath, green on the upper surface, 5-nerved; flowers in large dense panicles. A handsome tree because of its foliage. When stirred by the wind the tree appears to be covered with white flowers, as the white under surfaces of the leaves become visible.

Miconia astroplocama Donn. Smith. Mullins River Road, in forest, *Schipp* 150; ranging to Costa Rica. A tree 9 meters high, the trunk 12 cm. in diameter; leaves large, abruptly short-acuminate, green above, brownish beneath, 5-nerved; panicles stiffly branched.

Miconia belizensis Standl. Field Mus. Bot. 8: 30. 1930. Type from Middlesex, in forest, *Schipp* 395. A tree 6 meters high, with trunk diameter of 10 cm.; leaves conspicuously dentate, green above, brownish beneath, 5-nerved, rounded or obtuse at the base.

Miconia calvescens DC. Temash River, in primary forest, *Schipp* 1338; southward to Brazil. A tree of 11 meters, the trunk 22 cm. in diameter; leaves very large, stalked, broadly oval or obovate-oval, abruptly short-pointed, 5-nerved, glabrate but more or less scurfy along the veins; flowers white, in large panicles; fruit black.

Miconia chrysophylla (L. Rich.) Urban. *Red Maya.* Mullins River Road, and elsewhere; ranging to South America and the West Indies. A tree 9 meters high, the trunk 10–13 cm. in diameter;

leaves brown beneath, green above, long-acuminate, 3-nerved; flowers small, in ample panicles.

Miconia ciliata (L. Rich.) DC. *Wild Maya. M. Schippii* Standl. Field Mus. Bot. 8: 29. 1930. Occasional in forest and thickets; type of *M. Schippii* from Big Creek, *Schipp* 220; extending to South America. A shrub 1.5–2 meters high; leaves oblong, acuminate, rounded or obtuse at the base, 5-nerved, when young short-hirsute on the upper surface; inflorescence a narrow panicle, more or less hirsute.

Miconia disparilis (Standl.) R. O. Williams. *Ossaea disparilis* Standl. Middlesex, in forest, *Schipp* 239; extending to Surinam. A slender shrub, glabrous except in the inflorescence; leaves oblong-elliptic, caudate-acuminate, almost entire, 3-nerved; flowers small, white.

Miconia dodecandra (Desr.) Cogn. Occasional in forest and thickets; southern Mexico to South America and the West Indies. A tree 9 meters high, with trunk diameter of 12 cm.; leaves rather small, ovate, acuminate, thick, entire or nearly so, 5-nerved; flowers large, the calyx 7 mm. long or more, densely tomentose; petals white; fruit black.

Miconia habrolepis Standl. *Red Maya.* In forest, Big Creek, Stann Creek Valley; Guatemala. A tree 9–12 meters high, the trunk 12 cm. in diameter; leaves large, with a short tail-like tip, 3-nerved, green above, brown beneath.

Miconia hondurensis Donn. Smith. Frequent in forest; ranging to Nicaragua. A tree 6–9 meters high, with trunk diameter of 10 cm., glabrous throughout; leaves broadly oblong, triplinerved, abruptly short-pointed.

Miconia hyperprasina Naud. In forest; southern Mexico and Central America. A slender shrub or tree, sometimes 7.5 meters high, with trunk diameter of 10 cm.; leaves mostly lance-oblong, 3-nerved, narrowly long-acuminate, almost glabrous; flowers small, in large panicles.

Miconia ibaguensis (Humb. & Bonpl.) Triana. All Pines and elsewhere, in pine flats; southern Mexico to South America. A tree 6 meters high, the trunk 10 cm. in diameter; leaves narrowly oblong-lanceolate, long-acuminate, 3–5-plinerved, short-hirsute, finely dentate; flowers in ample panicles.

Miconia impetiolaris (Swartz) Don. *Maya.* Occasional in forest and thickets; widely distributed in tropical America. A large

shrub or small tree, as much as 7.5 meters high, with trunk diameter of 10 cm.; leaves very large, with narrow short abrupt tips, narrowly and deeply cordate at the base, 3–5-nerved; panicles very large and many-flowered.

Miconia involucrata Donn. Smith. Middlesex, secondary forest, *Schipp* 377; Guatemala. A tree 7.5 meters high, the trunk 12 cm. in diameter; leaves green above, grayish beneath, with short tail-like tips, entire or nearly so; panicles small, the flowers large.

Miconia lacera (Humb. & Bonpl.) Naud. Mullins River Road, edge of forest, *Schipp* 14; widely distributed in tropical America. A shrub a meter high, the branches hirsute with very long, brownish or red hairs; leaves small, hirsute, ovate-oblong, long-acuminate; panicles small, narrow, densely hirsute.

Miconia laevigata (L.) DC. Occasional in forest and thickets; widely distributed in tropical America. A slender shrub; leaves thin, long-petiolate, ovate-oblong, long-acuminate, 5-nerved, finely pubescent beneath or glabrate; panicles lax and open.

Miconia longifolia (Aubl.) DC. Occasional in forest and thickets; widely distributed in tropical America. A shrub or tree 7.5 meters high or less, the trunk sometimes 10 cm. in diameter; leaves glabrous, lance-oblong, long-acuminate, entire or nearly so; flowers small, in ample panicles.

Miconia Mathaei Naud. Big Creek, in forest, *Schipp* 76; ranging to South America. A tree 12 meters high, the trunk 17 cm. in diameter; branches very densely brown-hirsute; leaves oblong, narrowly acuminate, 5-nerved, brown-hirsute beneath.

Miconia nervosa (Smith) Triana. Mullins River Road, edge of forest, *Schipp* 56; Central and South America. A shrub 1–2 meters high, densely short-hairy throughout; leaves rather large, thin, entire or nearly so, the lateral nerves arising far above the base of the blade.

Miconia obovalis Naud. Occasional in forest; ranging to the West Indies and South America. A tree 7–9 meters high, the trunk 10 cm. in diameter; leaves large, leathery, abruptly short-acuminate, entire or obtusely toothed, minutely brown-pubescent beneath; panicles small or large, open.

Miconia ochroleuca Standl. Field Mus. Bot. 11: 138. 1932. Type from Middlesex, in forest, *Schipp* 407. A tree 7.5 meters high, with trunk diameter of 7 cm., glabrous or nearly so; leaves small,

entire, acuminate, 3-nerved, acute at the base; panicles small; petals cream-colored.

Miconia oinochrophylla Donn. Smith. Middlesex, in forest, *Schipp;* Guatemala and Honduras. A glabrous shrub 2–3 meters high; leaves rather large, lance-oblong, entire, 3-nerved; panicles ample, open, many-flowered, the branches purple-red. The shrub is an exceptionally handsome one because of its remarkable leaves, which are green above and brilliant purple-red beneath.

Miconia oligocephala Donn. Smith. Middlesex, in forest, *Schipp* 232; Guatemala. A tree 7.5 meters high, with trunk diameter of 10 cm.; leaves lance-oblong, thick, finely dentate, 5-plinerved, green above, whitish beneath; panicles small and dense.

Miconia pteropoda Naud. *Bastard Water Wood.* Maskall Pine Ridge and elsewhere; extending to South America. Leaves almost glabrous, triplinerved, lustrous, paler beneath, oblong, short-acuminate.

Miconia Schlimii Triana. *Sirín* (Honduras). Eldorado, in forest, *Schipp* 1032; ranging to northern South America. A tree 9 meters high with trunk diameter of 10 cm.; leaves narrowly lance-oblong, unequal at the base, 5-plinerved, brownish-scurfy beneath; panicles few-flowered, the rather large flowers white.

Miconia stenostachya DC. In forest or thickets; ranging to the West Indies and South America. A shrub or small tree; leaves long-petiolate, oblong, obtuse or rounded at the base, green and glabrous above, white beneath, entire; panicles large, open.

MOURIRIA Aubl.

Shrubs or small trees, glabrous throughout; leaves entire, sessile or nearly so, 1-nerved or penninerved; flowers small, clustered in the leaf axils; petals acute or acuminate; fruit baccate, 1–4-seeded. In general appearance, because of the form of their leaves, the Mouririas are very unlike other members of the family. Wood reddish, exceedingly hard, heavy, tough, and strong, fine-textured, irregularly grained, not easy to work, durable; distinguished from other melastomes in the Colony by presence of strands of included phloem; timber little used.

Leaves acute at the base, about 5 cm. wide.....*M. cyphocarpa.*

Leaves rounded or subcordate at the base, mostly 2–2.5 cm. wide. *M. parvifolia.*

Mouriria cyphocarpa Standl. Occasional in forest, *Schipp* 70; Guatemala. A tree 12 meters high, the trunk 20 cm. in diameter; leaves lance-oblong or elliptic-oblong, short-petiolate, penninerved.

Mouriria parvifolia Benth. *Jug, Half Crown. Cacho de Venado.* Frequent in forest; Mexico to Panama. A slender shrub or small tree; leaves ovate-oblong, acuminate; flowers very small, white; berries red.

NEPSERA Naud.

Nepsera aquatica (Aubl.) Naud.

OSSAEA DC.

Shrubs or small trees with thin leaves; flowers small, paniced, axillary; petals acute; fruit a small, often conspicuously ribbed berry.

Flowers densely clustered in the leaf axils or on naked branches. *O. trichocalyx.*

Flowers in lax axillary panicles..... *O. micrantha.*

Ossaea micrantha (Swartz) Macfad. Middlesex, river bank, *Schipp* 235; widely distributed in tropical America. A slender shrub or tree, sometimes 6 meters high, with a trunk 7.5 cm. in diameter; leaves thin, acuminate, almost glabrous; petals white; berries white and translucent, strongly ribbed when dry.

Ossaea trichocalyx Pittier. Middlesex, in forest, occasional, *Schipp* 240; ranging to Panama. A shrub 2 meters high; leaves ovate, acuminate, abruptly contracted and decurrent at the base, entire, glabrate; berries blue or violet.

PTEROLEPIS Miq.

Pterolepis pumila (DC.) Cogn.

Pterolepis trichotoma (Rottb.) Cogn. Honey Camp.

TIBOUCHINA Aubl.

Tibouchina longifolia (Vahl) Baill. Occasional in thickets. Plants essentially herbaceous, but sometimes suffrutescent.

TOCOCA Aubl.

Shrubs or small trees, hispid or almost glabrous; leaves large, petiolate, entire or toothed; flowers small or large, in terminal panicles.

Branches glabrous; petioles bearing inflated vesicles.... *T. coriacea.*

Branches hispid; petioles without vesicles..... *T. grandifolia.*

Tococa coriacea S. Moore, Journ. Bot. 18: 3. 1880. *T. Peckiana* Robinson, Proc. Amer. Acad. 45: 395. 1910. Type of *T. coriacea* from Belize; type of *T. Peckiana* from Manatee Lagoon, *Peck* 68; Mullins River Road, in forest, *Schipp* 227. An almost glabrous shrub or tree as much as 6 meters high; leaves large, 5-nerved, with long tail-like tips, finely serrulate, the petiole with large bladder-like formicaria near the apex; flowers pinkish white, in small dense terminal panicles; fruit a berry. I have not seen original material of either of the species listed, but the two descriptions agree well except in minor details, and I feel safe in reducing the later name to synonymy, since it is improbable that two closely related species of this small genus occur in British Honduras.

Tococa grandifolia Standl. Pueblo Viejo, *Schipp* 1253; Honduras. A shrub 2–3.5 meters high, the stout branches covered with very long and thick bristles; leaves short-petioled, broadly elliptic, about 30 cm. long and 20 cm. wide, 5-nerved, bristly beneath along the nerves; petals small, pale pink; fruit a purple-red berry.

TOPOBEA Aubl.

Topobea calycularis Naud. In forest, Dolores, *Schipp* S496; extending to Mexico and Nicaragua. A shrub or tree as much as 7 meters high, with a trunk 10 cm. in diameter; leaves glabrous, oblong or elliptic-oblong, caudate-acuminate, entire; flowers solitary or clustered in the leaf axils, pink, the calyx surrounded by bracts.

ONAGRACEAE. Evening Primrose Family

JUSSIAEA L.

Jussiaea affinis DC. Like other species of the genus, this is an herb with yellow flowers.

Jussiaea erecta L.

Jussiaea nervosa Poir.

Jussiaea repens L. An aquatic plant.

Jussiaea suffruticosa L.

OOCARPON Micheli

Oocarpon torulosum (Arn.) Urban. All Pines, *Schipp* S185. The plant is unknown elsewhere in continental North America.

ARALIACEAE. Ginseng Family

Trees or shrubs; leaves alternate, simple or compound, with stipules; flowers perfect or of separate sexes, in heads or umbels,

small, greenish; calyx tube adnate to the ovary, the limb short, truncate or toothed; petals usually 5; stamens as many as the petals; fruit a berry, containing 2–7 one-seeded nutlets. Woods white or grayish, subject to sapstain; rather light, but firm and tenacious, medium-textured, easy to work, perishable; suitable for box boards and interior construction lumber.

Flowers in heads; leaves entire or lobed.....*Oreopanax.*
Flowers in umbels.
Leaves digitately compound.....*Didymopanax.*
Leaves simple.....*Gilibertia.*

DIDYMOPANAX Dcne. & Planch.

Didymopanax Morototoni (Aubl.) Dcne. & Planch. Occasional in forest; southward to South America. A tree 12 meters high or more, with trunk diameter of 22 cm.; leaves long-stalked, large, the 7–10 leaflets long-stalked, oblong to obovate, entire, densely tomentose beneath; flowers white, in large panicles; fruit pale, compressed, 2-celled. (For description of wood see *T. of T. A.*, pp. 484–485.)

GILIBERTIA Ruiz & Pavón

Glabrous shrubs or trees; leaves long-stalked, entire or 3-lobed; umbels arranged in panicles or umbels; fruit fleshy, 5–6-celled.

Leaves elliptic, thick; panicles usually as long as the leaves or longer. *G. concinna.*
Leaves oblong or elliptic-oblong, thin; panicles much shorter than the leaves.....*G. Smithiana.*

Gilibertia concinna Standl. Trop. Woods 18: 30. 1929. *White Gumbolimbo. Sac-chacah* (Maya). Type from Honey Camp, *Lundell* 115; El Cayo, *Bartlett* 13012; Freshwater Creek, *Kinloch.* A tree, the trunk up to 45 cm. in diameter; leaves on very long, slender petioles, acute at the base, abruptly short-pointed; berries 5 mm. in diameter.

Gilibertia Smithiana I. M. Johnston. Middlesex, *Schipp;* southern Mexico to Panama. A shrub or tree, as much as 15 meters high, with trunk diameter of 30 cm.; leaves variable in size, often very unequal, acuminate, obtuse or rounded at the base; flowers greenish; fruit black. In this, as in related species, the leaves of fertile branches are entire, while those of vegetative shoots or of young plants are deeply lobed.

OREOPANAX Dcne. & Planch.

Trees or shrubs, terrestrial or epiphytic; flowers small, greenish, in dense rounded heads; fruits usually black at maturity.

Leaves palmately lobed, stellate-tomentose.....*O. lachnocephala.*

Leaves entire, simple, glabrous.

Leaves ovate to rounded, obtuse or rounded at the base.
O. capitatum.

Leaves oblong, acute at the base.....*O. meiocephalum.*

Oreopanax capitatum (Jacq.) Dcne. & Planch. El Cayo District; Forest Home; widely distributed in tropical America. A shrub or tree, the trunk as much as 12 cm. in diameter, the young plants often epiphytic; leaves ovate to rounded, long-stalked, acute to rounded at the apex, leathery, glabrous, entire; flower heads arranged in dense panicles.

Oreopanax lachnocephala Standl. Carnegie Inst. Wash. Publ. 461: 77. 1935. Type collected at Camp 31 on the Guatemalan boundary, 630 meters, *Schipp* 1272. A tree of 18 meters, the trunk 30 cm. in diameter; leaves large, deeply 7-lobed; flower heads arranged in large panicles.

Oreopanax meiocephalum Donn. Smith. *Yaxyulup* (Maya). Hillbank, *Winzerling* (Yale 9889); Guatemala. A small glabrous tree; leaves thin, entire or undulate, acute or short-acuminate, slender-stalked; flower heads very small and few-flowered, in small clusters.

UMBELLIFERAE. Carrot Family

CENTELLA L.

Centella asiatica (L.) Urban. Maskall Pine Ridge, *Gentle* 1094.

ERYNGIUM L.

Eryngium foetidum L. *Culantro* (Honduras). A weedy plant whose ill-scented leaves are employed commonly for flavoring soup and other dishes, to which they impart a most agreeable flavor.

FOENICULUM Hill

Foeniculum vulgare Hill. *Fennel. Eneldo.* Cultivated for its foliage and seeds, which are used for flavoring food. Native of the Old World.

HYDROCOTYLE L.

Hydrocotyle umbellata L.

CLETHRACEAE. Clethra Family

Trees or large shrubs; leaves alternate, short-stalked, entire or toothed, without stipules; flowers small, perfect, in simple or branched racemes; sepals 5; petals 5, white or pinkish; stamens 10, the anthers sagittate, opening by apical pores; fruit a 3–5-valved capsule. The family Clethraceae consists only of the genera *Clethra* and *Schizocardia*, the latter known only from British Honduras.

Fruit 3-celled; flowers in simple or branched, terminal racemes; sepals entire, not enlarging in fruit.....*Clethra.*

Fruit 5-celled; flowers in simple axillary racemes; sepals deeply laciniate, enlarging in fruit.....*Schizocardia.*

CLETHRA L.

Clethra hondurensis Britt. All Pines, open forest, *Schipp* 726; ranging to Honduras. A tree 7.5 meters high, the trunk 10 cm. in diameter; leaves oblanceolate-oblong, rounded at the apex, obscurely toothed, green above, white-tomentose beneath; flowers very fragrant. Wood brown, moderately hard and heavy, fine-textured, easy to work, is not durable; not utilized. (See *Trop. Woods* 15: 20.)

Clethra lanata Mart. & Gal. Temash River, in secondary forest, *Schipp* 1343; Mexico and Central America. Similar to the preceding species, but the leaves covered beneath with a rather loose, brown tomentum, that of *C. hondurensis* being fine and appressed.

SCHIZOCARDIA Smith & Standl.

Schizocardia belizensis Smith & Standl. Trop. Woods 32: 9. 1932. Type from Stann Creek Valley, Nineteen Mile, on mountain ridges, *Schipp* 965; near Middlesex, mountain forest, 540 meters, *Schipp* 443; Pine Peak, *D. Stevenson.* A tree 15–18 meters high, the trunk 25–90 cm. in diameter; leaves small, narrowly oblanceolate-oblong, entire, glabrous, obtuse; flowers small, pink or white, with large, deeply fringed, persistent sepals. Wood reddish brown, hard, heavy, tough, strong, rather fine-textured, irregularly grained; not utilized. (See *Trop. Woods* 32: 12.)

ERICACEAE. Heath Family

SATYRIA Klotzsch

Satyria meiantha Donn. Smith. Camp 35, Guatemalan boundary, *Schipp* S631; Guatemala. A large glabrous epiphytic

shrub; leaves large, leathery, lance-oblong, entire, acuminate, triplinerved; flowers tubular, dark rose, waxy, about 1 cm. long; fruit a juicy blue-black berry.

MYRSINACEAE. Myrsine Family

Shrubs or small trees; leaves alternate, without stipules, entire or toothed, generally marked with translucent or dark dots or lines; flowers small, perfect, white or pink, 4–5-parted, with inferior calyx; petals usually more or less united, the corolla rotate; stamens 4–5, opposite the corolla lobes and attached to them; fruit a small globose berry or drupe. Wood brown or grayish, moderately hard to soft, rather coarse-textured, with conspicuous rays showing attractively on radial surface; not durable; not utilized, but sometimes suitable for small cabinet work.

Flowers densely clustered in the leaf axils..... *Rapanea.*

Flowers panicled.

Corolla glabrous outside..... *Ardisia.*

Corolla pubescent outside..... *Parathesis.*

ARDISIA Swartz

Shrubs or small trees, usually glabrous or nearly so; leaves small or large, entire or toothed, thin or leathery; flowers small, white or pinkish, chiefly in terminal panicles; fruit globular, 1-seeded.

Leaves conspicuously toothed.

Leaves 30–50 cm. long, with very close, acute teeth.. *A. pellucida.*

Leaves 8–12 cm. long, with remote obtuse teeth.... *A. Mitchellae.*

Leaves entire.

Flowers in elongate racemes.

Leaves small, mostly 2–3 cm. wide, broadest above the middle, acute or acutish..... *A. escallonioides.*

Leaves large, commonly 6–7 cm. wide or broader, obtuse or rounded at the apex, broadest at the middle.. *A. paschalis.*

Flowers in panicled corymbs or umbels.

Branches of the inflorescence rusty-tomentose; petals 7 mm. long..... *A. Donnell-Smithii.*

Branches of the inflorescence glabrous or nearly so; petals 4–5 mm. long..... *A. compressa.*

Ardisia compressa HBK. Frequent in forest; Mexico to northern South America. A glabrous shrub or small tree; leaves oblong-elliptic, 10–17 cm. long, entire; rachis of the inflorescence

bright red, the flowers white; drupes 5 mm. in diameter, red, turning black. The fruits, as in other species, are edible and have an agreeable flavor, but the amount of flesh and juice is scant.

Ardisia Donnell-Smithii Mez. Middlesex, in forest; Guatemala. A tree 7.5 meters high, the trunk 10 cm. in diameter; leaves long-acuminate, entire, minutely puberulent beneath on the veins; flowers pink, the anthers yellow.

Ardisia escallonioides Schlecht. & Cham. *Zachoclub* (Yucatan, Maya). Frequent about Honey Camp; Mexico to Guatemala; Florida and the West Indies. An almost glabrous shrub or small tree; flowers white or pink, fragrant, in dense panicles; fruit black, 4–8 mm. in diameter.

Ardisia Mitchellae I. M. Johnston. Pueblo Viejo, in forest, *Schipp* S692; Honduras. A shrub or tree, as much as 9 meters high, with a trunk diameter of 7 cm., glabrous; leaves oblong-elliptic, acuminate; flowers pink, in small umbels; fruit bright red, almost 1 cm. in diameter when mature.

Ardisia paschalis Donn. Smith. Caves, Stann Creek Railway, *Schipp* 431, growing on limestone hill; also in Guatemala and Salvador. A shrub 3 meters high, glabrous; flowers larger than in the other species, on very long pedicels.

Ardisia pellucida Oerst. Headwaters of Río Grande, *Schipp* S559; Honduras to southern Mexico. A shrub 1.5–2.5 meters high, simple or with few branches; leaves oblong-obovate, thin, long-tapering to the base, somewhat scurfy beneath; flowers in umbels or short racemes.

PARATHESIS Hook. f.

Shrubs or small trees, in general appearance much like the Ardisias, but immediately distinguishable, in the case of the local species, by the pubescent corollas.

Leaves coarsely stellate-hirsute beneath with rusty hairs. *P. aeruginosa.*

Leaves glabrous beneath or minutely scurfy..... *P. obovata.*

Parathesis aeruginosa Standl. Base of Cockscomb Mountains, in forest, rare, *Schipp* S121; ranging to Costa Rica. A shrub 4.5 meters high, the trunk 5 cm. in diameter; leaves large, oblanceolate-oblong, long-acuminate; flowers pink, corymbose, arranged in open panicles.

Parathesis obovata Standl. Field Mus. Bot. 4: 250. 1929. Type from Tower Hill, *Karling* 29; numerous additional collections

obtained at Honey Camp, El Cayo, and Stann Creek Valley; also in Guatemala. An almost glabrous shrub or small tree, sometimes 6 meters high, with a trunk 10 cm. in diameter; leaves rather small, chiefly oblong-obovate, obtuse or acute; flowers pink, with yellow anthers.

RAPANEA Aubl.

Rapanea guianensis Aubl. All Pines, edge of mangrove swamp; Manatee Pine Ridge; unknown elsewhere in Central America; southern Mexico, Florida, West Indies, and northern South America. A glabrous shrub or tree as much as 9 meters high, the trunk 12 cm. in diameter; leaves leathery, oblong or obovate, rounded at the apex; fruit black or bluish, only 4 mm. in diameter.

THEOPHRASTACEAE. Theophrasta Family

Shrubs or small trees, the leaves entire, alternate or pseudoverticillate, without stipules; flowers usually terminal, solitary or in racemes; sepals 5; petals 5, united, fleshy; stamens 5, accompanied by as many staminodia, inserted on the corolla; fruit a drupe or berry.

Flowers solitary.....*Deherainia.*

Flowers in racemes.....*Jacquinia.*

DEHERAINIA Dcne.

Deherainia smaragdina (Planch.) Dcne. Occasional in forests; Tabasco to Guatemala. A glabrous shrub 4.5 meters high, with trunk 5 cm. in diameter; leaves pseudoverticillate, short-petiolate, oblong-oblanceolate, acuminate, not spine-tipped; flowers yellowish green, 1.5–2 cm. long; fruit lance-oblong, 7.5 cm. long, pointed.

JACQUINIA L.

Shrubs or small trees; leaves leathery or rather thin, with slender or stout, spine-like tips; flowers small, yellow or orange; staminodia petal-like; fruit globose, with a hard shell, containing few seeds. Wood yellow, hard, coarse-textured, coarse-rayed; not utilized.

Leaves rounded or very obtuse at the apex, not spine-tipped. *J. Schippii.*

Leaves acute or acuminate, terminated by a sharp spine.

Leaves thick and leathery; flowers in elongate racemes or corymbs. *J. aurantiaca.*

Leaves thin; flowers in umbel-like racemes.....*J. paludicola.*

Jacquinia aurantiaca Ait. *Knock-me-back. Xcansik* (Maya). Northern plains; Mexico, Central America, West Indies. A densely branched shrub, glabrous throughout; leaves oblong-elliptic or obovate, mostly 3–6 cm. long, with a very stiff, spine-like tip; flowers orange, 8–9 mm. long, the corolla stiff and leathery; fruit 2 cm. or less in diameter, rounded at the apex. The stiff hard corollas keep their form when dried, and because of their bright color, they sometimes are strung on twine and used as decorations. This and other species of the genus are employed in some regions as fish poisons.

Jacquinia paludicola Standl. Field Mus. Bot. 11: 138. 1932. Type from Forest Home, in swampy forest, *Schipp* 1028; Río Grande, *Schipp* S596; Machaca, *Schipp* S571. A slender shrub or tree 1.5–6 meters high, the trunk as much as 7 cm. in diameter; leaves oblong-oblanceolate, 8–12 cm. long, acuminate, with a weak spinelike tip; flowers yellow, 6 mm. long.

Jacquinia Schippii Standl. Carnegie Inst. Wash. Publ. 461: 78. 1935. Type from Jacinto Hills, in forest, 270 meters, *Schipp* 1233. A tree of 10 meters, the trunk 20 cm. in diameter; leaves leathery, oblong or oblanceolate-oblong, 3–5 cm. long.

PRIMULACEAE. Primrose Family

ANAGALLIS L.

Anagallis pumila Swartz. Maskall Pine Ridge, *Gentle* 1096.

SAMOLUS L.

Samolus ebracteatus HBK.

SAPOTACEAE. Sapodilla Family

Trees or large shrubs, sometimes armed with spines, the sap commonly milky; leaves alternate, entire, stalked, without stipules, usually thick and leathery; flowers small, perfect, borne in the leaf axils or on older naked branches, white or greenish; sepals 4–12, overlapping; corolla of united petals, with 4 or more lobes, appendages often present between the lobes; stamens as many as the corolla lobes, inserted on the corolla, usually alternating with staminodia or sterile stamens; fruit a small or large, fleshy drupe or berry, containing one or several seeds. The family is of great importance in British Honduras because it contains the trees that produce chicle, one of the most important exports of the country. The Yucatan Peninsula is the center of distribution for the family

in North America, and British Honduras contains more members of the group than may be found in any other part of Central America of equal size, except perhaps adjacent Petén.

The group is a difficult one to study from herbarium material, and most of the species still are imperfectly known. It is highly desirable that large series of herbarium specimens be collected to illustrate the various species and their local variations. The genera of the Sapotaceae are based upon flower and seed characters that are difficult of determination. On this account, in order to simplify so far as possible the recognition of the local species, there is given here a key to all the species of the family, rather than one to the genera.

Leaves at maturity very densely covered on the under surface with appressed, silky, glistening, brown or grayish hairs; staminodia none. Leaves oval or oblong, obtuse or rounded at the base, mostly 5–9 cm. long.

Flowers small, about 2 mm. long, the corolla glabrous; native tree.....*Chrysophyllum oliviforme.*

Flowers larger, 4 mm. long, the corolla silky-pubescent; cultivated tree.....*Chrysophyllum Cainito.*

Leaves at maturity glabrate, or at least never densely silky-pubescent, sometimes densely silky when very young; staminodia present between the stamens.

Leaves covered beneath with a dense, dark rusty, rather close tomentum of matted hairs, rounded or very obtuse at the apex, the tomentum sometimes disappearing in extreme age except along the veins.

Leaves 6.5–8.5 cm. long.....*Sideroxylon rufotomentosum.*

Leaves 15–25 cm. long.....*Dipholis Stevensonii.*

Leaves not rusty-tomentose beneath, or, if so, only when very young.

Leaves very large, usually 25–35 cm. long, broadest near the apex, long-tapering to the base, short-stalked, rather thin. Fruit usually very large; flowers large, with 8–10 sepals, borne mostly on naked branches below the leaves.

Fruits 9–10 cm. long, with thin green smooth skin; petioles whitish-hairy or glabrate.....*Calocarpum viride.*

Fruits usually much larger, with thick rough russet skin; petioles usually densely brown-hairy.

Calocarpum mammosum.

Leaves not as described above, most often broadest at or below the middle, seldom long-tapering to the base, often leathery.

Leaves small, 2.5–9 cm. long, usually 3.5 cm. wide or less, rounded or very obtuse at the apex. Plants often armed with spines; flowers small, in the axils of leaves; appendages present between the corolla lobes; ovary hairy.

Fruit globose or depressed-globose, broader than long; leaves thick. Plants usually unarmed. . *Bumelia retusa.*

Fruit ellipsoid-globose, longer than broad; leaves comparatively thin.

Corolla 3 mm. long. Plants usually conspicuously armed with spines..... *Bumelia mayana.*

Corolla 6 mm. long..... *Bumelia megaphylla.*

Leaves usually much larger or, if small, acute or acuminate at the apex. Plants unarmed.

Lateral nerves on the lower surface of the leaves obscure or obsolete. Flowers 6–8 mm. long; leaves narrowly oblong to narrowly oval, rounded to acutish at the apex, thick and leathery.

Sepals oblong; leaves mostly acutish..... *Achras Chicle.*

Sepals ovate; leaves mostly rounded or very obtuse at the apex. Leaves shorter..... *Achras Zapota.*

Lateral nerves evident on the lower surface of the leaves, usually conspicuously elevated.

Leaves abruptly long-acuminate at the apex.

Leaves mostly obovate-oblong, broadest above the middle, usually large and 15–25 cm. long or larger..... *Lucuma Durlandii.*

Leaves oblong to elliptic, broadest at or near the middle, usually smaller.

Fruit 3 cm. long or larger; leaves chiefly oblong and 16–18 cm. long..... *Lucuma izabalensis.*

Fruit 1.5 cm. long; leaves chiefly elliptic or oblong-elliptic and 8–12 cm. long... *Sideroxylon Meyeri.*

Leaves not abruptly long-acuminate, rounded to acute at the apex or abruptly and shortly obtuse-acuminate, sometimes gradually long-attenuate.

Leaves gradually long-attenuate to each end, small, mostly 2–3 cm. wide; appendages present between the corolla lobes.

Sepals 3.5–4 mm. long; leaves very thick and hard. *Dipholis durifolia.*

Sepals 2 mm. long; leaves thin and flexible. *Dipholis salicifolia.*

Leaves not gradually long-attenuate to each end; corolla without appendages.

Petioles 7–10 mm. long. Leaves small, 6–8 cm. long, 3 cm. wide..... *Lucuma belizensis.*

Petioles usually much more than 1 cm. long.

Flowers almost sessile, the pedicels shorter than the sepals, small. Leaves small, narrowly oblong, usually less than 3 cm. wide, leathery. *Sideroxylon amygdalinum.*

Flowers long-pedicellate, the pedicels longer than the sepals.

Sepals glabrous or nearly so; leaves mostly obtuse at the base, on long and very slender petioles..... *Sideroxylon Gaumeri.*

Sepals densely silky-pubescent; leaves acute at the base.

Sepals 6–7 mm. long..... *Lucuma laeteviridis.*

Sepals 3–5 mm. long.

Sepals 3 mm. long..... *Lucuma Heyderi.*

Sepals 4–5 mm. long *Lucuma campechiana.*

ACHRAS L.

Large or medium-sized trees with handsome foliage, the leaves on long or rather short petioles, leathery; flowers large, clustered in the leaf axils or on naked branches below the leaves; sepals usually 6; corolla glabrous; fruit large, containing one or more seeds. Wood dark red, very hard, heavy, tough, and strong, fine-textured, finishes smoothly, is durable; used locally for heavy, permanent construction and tool handles; suitable also for turnery and flooring. (See *T. of T. A.*, p. 490.)

Achras Chicle Pittier. *Chicle Macho. Zapotillo* (Guatemala). Collected in the Orange Walk District and probably elsewhere; Guatemala and Salvador. A tall tree, often 30–38 meters high, with a trunk almost a meter in diameter; leaves rather narrowly oblong, mostly 17–22 cm. long, thick; flowers clustered on old branches just

below the leaves; fruit much smaller than in *A. Zapota*, but the 1–2 seeds as large as in that species. C. L. Lundell, one of the collectors of material referred here, thinks that the name used may cover two distinct species, but characters by which they may be separated are not apparent in herbarium specimens. It is reported that the gum of some trees, although of poor quality, is employed as a chicle adulterant; in other trees there is a high yield of white latex, difficult to coagulate, the gum being somewhat inferior to pure chicle, and exported under the name of "crown gum."

Achras Zapota L. *Chicle Tree, Sapodilla. Zapote Blanco, Zapote Colorado, Zapote Morado. Ya, Chicozapote* (Yucatan). Common or abundant in the northern half of the Colony; native in the Yucatan Peninsula and adjacent regions, and cultivated widely in tropical America. A large or medium-sized tree with dense crown; leaves clustered at the ends of the branches, glabrous when mature; flowers whitish, solitary in the leaf axils, brown-hairy; fruit ovoid or globose, 6 cm. or more in diameter, containing 1–5 large seeds. This is one of the most important, or at present perhaps the most important, of British Honduras trees. From its milky latex, obtained by tapping the trunks, is procured the chicle from which chewing gum is made. British Honduras is one of the principal sources of this article, practically all of which is employed in the United States, and much of the chicle produced in Petén, Guatemala, is exported through the Colony.

The fruits of the sapodilla have a yellowish brown, translucent, sweet flesh of rather "gummy" texture that is agreeable in flavor, and is much eaten. The sapodilla, or níspero, as it is called in most parts of Central America, is considered by some foreigners to be the best of all Central American fruits.

In British Honduras the chicleros, who tap the sapodilla trees for their latex, distinguish several varieties of the tree, as indicated by the vernacular names cited above. Herbarium specimens of these forms do not reveal any characters by which they may be separated as species, and it is suspected that the forms are more or less casual, dependent perhaps upon soil and other environmental conditions.

BUMELIA Swartz

Shrubs or trees, often with silky pubescence, especially on the flowers and young branches, frequently armed with spines; flowers small, greenish or white, clustered in the leaf axils or on old branches; sepals 5, unequal; corolla 5-lobed, with 2 lobe-like appendages in

each sinus; staminodia petal-like; fruit small, 1-seeded. Wood pale yellow, very heavy, hard, and strong, fine-textured, taking a high polish, is moderately durable; suitable for tool handles and turnery. (See *T. of T. A.*, p. 495.)

Bumelia mayana Standl. *Has toch* (Yucatan, Maya). Jungle beyond Little Mountain Pine Ridge, El Cayo District, *Bartlett* 13099; Petén, Yucatan. A shrub or small tree, the trunk as much as 20 cm. in diameter, the branches armed with spines; leaves small, oblong to elliptic or almost rounded, glabrate in age; fruit 8–10 mm. long.

Bumelia megaphylla Blake, Contr. Gray Herb. 52: 76. 1917. Type from Río Grande, in forest, *Peck* 756; Temash River, *Schipp* 1077. A small or medium-sized tree with hard light-colored wood; leaves elliptic-oblong, rounded or retuse at the apex, rounded at the base, glabrate.

Bumelia retusa Swartz. All Pines, mangrove swamp, *Schipp* 585; Yucatan, West Indies. A tree 6 meters high with trunk diameter of 10 cm.; leaves small, broadly obovate, rounded at the apex, cuneate at the base, glabrate or with scattered appressed grayish hairs; flowers whitish; fruit black.

CALOCARPUM Pierre

Large trees; leaves very large, thin, short-stalked, mostly oblanceolate-oblong, deciduous, long-tapering to the base, short-pointed or often rounded at the apex, with abundant pubescence beneath when young, but glabrate in age; flowers comparatively large, mostly on naked branches below the leaves; sepals 8–10; fruit large and edible. Wood light brown or buff, moderately hard, strong, medium-textured, easy to work, fairly durable; used for house frames. (See *T. of T. A.*, pp. 491–492.)

Calocarpum mammosum (L.) Pierre. *Mamee Apple, Mamee Sapote. Zapote. Mamey, Mamey Colorado* (Yucatan). *Chacalhaas* (Yucatan, Maya). Frequent in forest and apparently widely distributed; native of Mexico and northern Central America, and planted widely in tropical America. A tall tree with milky latex; leaves abruptly short-pointed or sometimes obtuse, the smaller veins neither much elevated nor very conspicuous beneath; flowers sessile or nearly so, cream-colored; fruit globose or ovoid, 8–20 cm. long, with pink or reddish flesh, containing a single large brown polished seed. The fruit is highly esteemed in Central America, and it is of good flavor, although sweet and somewhat insipid.

Calocarpum viride Pittier. *White Faisán, Red Faisán. Zapotillo* (Honduras); *Ingerto, Zapote ingerto* (Guatemala). El Cayo District and probably elsewhere; southward to Panama. A large tree, sometimes 24 meters high, with trunk diameter of 45 cm.; leaves usually narrowly long-pointed, the smaller veins commonly elevated and conspicuous on the lower surface; fruit rather similar to that of the preceding species, but smaller. Of the White Faisán, Lundell reports that its gum is similar to that of chicle, and produced in quantities comparable with that obtained from the Sapodilla. He states that the gum of Red Faisán is as good as chicle, but its yield not so high as that of White Faisán.

CHRYSOPHYLLUM L. Star-apple

Large or medium-sized trees with milky latex; leaves rather small, oblong or elliptic-oblong, leathery, obtuse or abruptly short-pointed, with numerous close parallel lateral nerves, glabrous on the upper surface, densely silky-hairy beneath; flowers small, stalked, clustered in the leaf axils or at naked nodes below the leaves; sepals 5–6; corolla 5–6-lobed; staminodia none; fruit small or large, containing 1 or more seeds. Wood brown or reddish, hard, heavy, strong, medium-textured, not difficult to work, fairly durable; used locally for heavy construction.

Chrysophyllum Cainito L. *Star-apple. Caimito* (Central America generally). Planted and perhaps naturalized; not native in Central America, so far as known, but often escaping from cultivation; West Indies. A medium-sized tree with broad, very dense crown; leaves covered beneath with dense golden-brown hairs; fruit resembling a small apple, containing several compressed brown seeds, smooth, with green or purple skin. The fruit is highly esteemed by some persons, being sweet and rather sticky, with more or less milky juice. When cut transversely, the seeds are seen radiating like the points of a star, hence the common English name. The tree is an excellent one for shade, and beautiful because of the contrasting colors of the upper and lower leaf surfaces, especially when the foliage is stirred by wind.

Chrysophyllum oliviforme L. *C. mexicanum* Brandeg. *Wild Star-apple, Damsel. Chiceh* (Maya). *Caimito* (Honduras). Frequent in wet or open forest; southern Mexico, Central America, West Indies. A tree 12 meters high or more, with dense spreading crown; leaves covered beneath with pale brown or sometimes grayish hairs; fruit oblong or ellipsoid, 1.5 cm. long, 1-seeded, yellowish.

DIPHOLIS A. DC.

Unarmed trees with small or rather large, usually leathery leaves; flowers small, mostly 5-parted, in axillary or lateral clusters; corolla with 2 appendages at each sinus; staminodia 5, often petal-like; fruit small, usually 1-seeded. Wood brown or reddish, hard, heavy, tough, medium-textured, durable; not utilized.

Dipholis durifolia Standl. Carnegie Inst. Wash. Publ. 461: 78. 1935. Type from bare hilltops, Jacinto Hills, *Schipp* 1202. A tree of 6 meters, the trunk 12 cm. in diameter; leaves slender-stalked, narrowly lance-oblong, glabrous, 7.5–9 cm. long, 1.7–2.5 cm. wide, long-acuminate, pale beneath, dark-green above.

Dipholis salicifolia (L.) A. DC. *Cháchiga, Mijico. Txitxya, Sac-chum* (Yucatan, Maya). Honey Camp region; southern Mexico, Petén, West Indies. A tree 15–23 meters high, with a trunk 45 cm. or more in diameter; leaves slender-stalked, oblong or narrowly lance-oblong, 6–17 cm. long, glabrous or nearly so; flowers small, whitish, densely clustered in the leaf axils; fruit subglobose, black, 8 mm. or more in diameter. Lundell reports that the tree is rare in the Honey Camp region, but that it is rich in latex and is commonly tapped by the chicleros.

Dipholis Stevensonii Standl. Trop. Woods 11: 21. 1927. *Zapote Faisán.* Type from Mopán region, *D. Stevenson.* A large tree; leaves 15–25 cm. long, short-stalked, broadly oblong or oblong-obovate, rounded at the apex, rounded or obtuse at the base, with abundant rusty tomentum on the veins of the lower leaf surface, even in age; fruits clustered on naked branches below the leaves, densely brown-tomentose at first but in age glabrate; seed 1, oval, 1.5 cm. long. In general appearance the tree is said to resemble *Calocarpum mammosum.* It is tapped for its latex, the product being called Chicle Faisán.

LUCUMA Molina

Small or large trees with milky latex; leaves small or large, leathery or rather thin; flowers small or large, stalked, solitary or clustered in the leaf axils; sepals 4–6; corolla 4–5-lobed, without appendages; stamens 4–5, alternating with small staminodia; fruit small or large, containing 1–5 seeds. Wood brown or reddish, hard and heavy to moderately so, tough and strong, rather fine-textured, easy to work, is durable; used for house timbers and handles.

Lucuma belizensis Standl. Trop. Woods 4: 6. 1925. *Silly Young.* Type from vicinity of Riversdale, *H.C. Kluge* 41 (Yale 7595);

Jacinto Hills; Camp 32 on the Guatemalan boundary. Leaves short-stalked, elliptic-oblong, 6–8 cm. long, 3 cm. wide, acute, at the base acute or acutish, glabrous or nearly so in age. The species is imperfectly known, and its generic position uncertain. Schipp reports it as a tree of 12–15 meters, with a trunk diameter of 25 cm.

Lucuma campechiana HBK. *Mamey Cerera, Mamey Cerilla. Kanizte* (Yucatan, Maya). Apparently frequent and rather widely distributed, in forest; Mexico and Central America. A small or medium-sized tree; leaves on rather short and slender petioles, oblanceolate to obovate, large, rather thin, acute or obtuse, glabrous or nearly so; flowers clustered in the leaf axils, brown-silky; fruit yellow, about 2.5 cm. in diameter, containing 1–4 large seeds. In some parts of Mexico and Central America the tree is planted for its fruit, which is rather ordinary in quality. There is some doubt regarding the proper spelling of the names used in British Honduras, their intended meaning being uncertain.

Lucuma Durlandii Standl. *Zapotillo* (Petén). Río Grande, *Schipp.* Type from El Paso, Petén; also at Uaxactún. A large or medium-sized tree, the trunk 10–18 cm. or greater in diameter; leaves large, obovate-oblong, leathery, tapering to the base, glabrous or nearly so; flowers small, brown-silky, densely clustered in the leaf axils. No information is available regarding any use that may be made of the tree.

Lucuma Heyderi Standl. Trop. Woods 11: 22. 1927. *Mamee Ciruela.* Type from British Honduras, the locality not known, *H. M. Heyder* 25. Leaves short-stalked, rather thin, oblong to obovate, 7–15 cm. long, rounded to obtuse at the apex, in age glabrous or nearly so; flowers solitary or clustered in the leaf axils, on slender stalks, densely grayish-silky. It is suspected that this may not be distinct from *L. campechiana.*

Lucuma izabalensis Standl. *Silión* (Guatemala, Honduras). Forest Home, *Schipp* S396; southward to Nicaragua. A very large or medium-sized tree with tall trunk and broad thin buttresses; leaves short-stalked, leathery, oblong, long-acuminate, acute and decurrent at the base, glabrous, usually pale when dry; fruit subglobose, yellow, 3 cm. long, 1-seeded.

Lucuma laeteviridis Pittier. Temash, river bank, *Schipp* S659; Guatemala. A tree of 9 meters, the trunk 25 cm. in diameter; leaves large, thin, oblong-obovate, long-stalked, obtuse, almost glabrous; flowers usually densely clustered in the leaf axils, cream-colored.

SIDEROXYLON L.

Large or medium-sized trees; leaves small or medium-sized, more or less leathery, on short or long petioles; flowers small, in dense clusters in the leaf axils or on naked branches; sepals usually 5, subequal; corolla usually 5-lobed, without appendages; staminodia none; fruit small, commonly 1-seeded. Wood yellow, similar to *Bumelia;* hard, heavy, strong, fairly durable; suitable for flooring and heavy construction.

Sideroxylon amygdalinum Standl. *Lucuma amygdalina* Standl.; *Bumelia laurifolia* Standl. Trop. Woods 18: 31. 1929. *Silly Young. Zapote Faisán* (Guatemala). Orange Walk District, apparently frequent; type of *B. laurifolia* from Honey Camp, *Lundell* LP14; Petén. A very large or medium-sized tree; leaves small, narrowly oblong, thick, often lustrous, acuminate, usually more or less unequal at the base, glabrous or nearly so; flowers very small, densely clustered; fruit ellipsoid, 2.5 cm. long, glabrate.

Sideroxylon Gaumeri Pittier. *Cream Tree. Zoy, Dzoi* (Maya). *Caracolillo* (Campeche). Apparently widely distributed and frequent; Yucatan, Campeche. A large tree, glabrous almost throughout; leaves on long slender petioles, 8–14 cm. long, rounded to long-pointed at the apex, bright green; flowers densely clustered on old wood or in the leaf axils, slender-stalked, whitish; fruit ellipsoid, yellowish, 2.5 cm. long. The fruit is edible.

Sideroxylon Meyeri Standl. *Zapotillo.* Orange Walk District; Petén, Campeche. A tall or medium-sized tree, with a trunk 30 cm. or more in diameter, glabrous except for the brown-silky flowers; leaves 7–15 cm. long, stalked, somewhat leathery, abruptly long-pointed at the apex, bright green; flowers stalked, densely clustered in the leaf axils; corolla white, glabrous; fruit ellipsoid, 1-seeded, 1.5 cm. long.

Sideroxylon rufotomentosum Standl. Carnegie Inst. Wash. Publ. 461: 79. 1935. Type from Camp 32, Guatemalan boundary, in forest, 810 meters, *Schipp* S674. A tree of 24 meters, the trunk 90 cm. in diameter; leaves long-stalked, oblong or obovate-oblong, rounded at the apex, obtuse at the base, densely brown-tomentose; fruit stalked, globose, 1 cm. long, rufous-tomentose or glabrate.

EBENACEAE. Ebony Family

DIOSPYROS L.

Trees or large shrubs; leaves alternate, entire, persistent or deciduous, without stipules; flowers small, of 2 sexes, white or green,

axillary, solitary or in cymes; corolla of united petals; fruit baccate, usually large, containing several large seeds. Heartwood gray to black, usually streaked; very hard, tough, strong, easy to work; sapwood suitable for tool handles; heartwood for articles of turnery and small cabinet work. The name Persimmon is applied commonly to various species of the genus, some of them distinguished for their edible fruits, which, however, are extremely astringent unless quite ripe. Old World species of *Diospyros* furnish the Ebony of commerce.

Calyx and corolla 3-lobed.....*D. verae-crucis.*

Calyx and corolla 4–6-lobed.

Fruit glabrous, 4–7 cm. broad; leaves large, oblong or oval. *D. Ebenaster.*

Fruit strigose, 1.5 cm. broad or less; leaves small.

Leaves narrowly oblong-lanceolate.....*D. Schippii.*

Leaves narrowly cuneate or spatulate.

Fruit globose; leaves 5–8 cm. long.....*D. cuneata.*

Fruit conspicuously longer than broad; leaves mostly 3–4 cm. long.....*D. bumelioides.*

Diospyros bumelioides Standl. Trop. Woods 18: 31. 1929. Known only from Honey Camp, *Lundell* 137 (type) and 342. A tree; calyx 4-lobed.

Diospyros cuneata Standl. Corozal District, *Gentle* 292; also in Yucatan. Reported as a shrub 2 meters high. It is somewhat questionable whether *D. cuneata* and *D. bumelioides* are really distinct species, the single British Honduras collection of *D. cuneata* being somewhat intermediate between the two types.

Diospyros Ebenaster Retz. *Zapote negro* (Yucatan). *Tauch* (Yucatan, Maya). Honey Camp; Mexico to Costa Rica; cultivated in the East Indies. A large tree; fruit at maturity with an edible pulp of poor flavor, that is soft, black, and of most disgusting appearance.

Diospyros Schippii Standl. Carnegie Inst. Wash. Publ. 461: 80. 1935. Type collected in forest, Camp 34, Guatemalan boundary, 780 meters, *Schipp* 1281. A tree of 15 meters, the trunk 20 cm. in diameter; leaves short-petiolate, 6–9 cm. long, narrowed to the obtuse apex, glabrous; fruit subglobose, 12 mm. long.

Diospyros verae-crucis Standl. *Cylil. Maba verae-crucis* Standl. Occasional; southern Mexico to Salvador. A tree 15 meters high, the trunk 35 cm. in diameter; fruit yellow at maturity.

SYMPLOCACEAE. Symplocos Family

SYMPLOCOS Jacq.

Symplocos martinicensis Jacq. Occasional in forest; West Indies; Petén, Honduras. A tree 9 meters high, the trunk 10–20 cm. in diameter; leaves alternate, without stipules, glabrous, oblong to obovate, crenulate, acuminate; flowers small, white, in short axillary racemes, the petals connate at the base; fruit an oblong berry 1.5–2 cm. long.

OLEACEAE. Olive Family

Shrubs or trees; leaves opposite, simple in the genera here listed, without stipules; flowers small and inconspicuous, chiefly axillary and fascicled or panicled; corolla of distinct or united petals, or often wanting; fruit a drupe.

Jasminum Sambac (L.) Ait. is cultivated for ornament in British Honduras, and probably other species of the same genus are in cultivation.

Corolla none; flowers in small clusters scarcely longer than the petioles.....*Forestiera.*

Corolla present, of 4 nearly distinct petals; flowers in long panicles. *Linociera.*

FORESTIERA Poir.

Forestiera rhamnifolia Griseb. Cornhouse Creek, near mangrove swamp, *Bartlett;* West Indies; known on the continent only from British Honduras. A small tree; leaves thin, elliptic, acute, glabrous, obscurely serrulate; drupes 1 cm. long, glaucous purple.

LINOCIERA Swartz

Trees or shrubs, glabrous or nearly so; leaves entire; flowers rather large, commonly panicled, with 4 narrow petals and 2 stamens; fruit a small oblong drupe.

Leaves elliptic, mostly obtuse or rounded at the base. . .*L. domingensis.*

Leaves mostly oblanceolate, acute to acuminate at the base. *L. oblanceolata.*

Linociera domingensis (Lam.) Krug & Urban. Camp 32, Guatemalan boundary, in forest, *Schipp* 1301; West Indies. A tree of 18 meters, the trunk 60 cm. in diameter; flowers pink.

Linociera oblanceolata Robinson, Proc. Amer. Acad. 49: 504. 1913. Type collected in forest, upper Moho River, *Peck* 719; apparently frequent; also in Guatemala. A tree of 12 meters or

less, the trunk as much as 25 cm. in diameter; flowers white, the petals 1 cm. long; drupes nearly 2 cm. long.

LOGANIACEAE. Strychnine Family

Herbs, shrubs, trees, or vines; leaves opposite, without stipules, but the petioles often united by a stipular line; flowers regular, large or small, the calyx 4–5 lobate; corolla gamopetalous, tubular, funnelform, or salverform; fruit a capsule, drupe, or berry.

Plants more or less woody.

Climbing shrubs; fruit large, baccate.....*Strychnos.*

Erect shrubs; fruit a small capsule.....*Buddleia.*

Plants small herbs.

Leaves linear, stiff; capsule not bilobate.....*Polypremum.*

Leaves broad, thin; capsule bilobate.

Capsule circumscissile, not compressed; corolla funnelform. *Spigelia.*

Capsule not circumscissile, laterally compressed; corolla urceolate. *Cynoctonum.*

BUDDLEIA L.

Buddleia americana L. Reported as rare, but one of the common weedy shrubs of tropical America generally. A shrub usually a meter high, with lanceolate or ovate, serrate or entire, long-acuminate, tomentose leaves; flowers small, yellowish, densely clustered, the clusters arranged in long panicled spikes. Reported from British Honduras, but almost certainly in error, as a tree 6 meters high.

CYNOCTONUM J. F. Gmel. Miterwort

Cynoctonum Mitreola (L.) Britton.

POLYPREMUM L.

Polypremum procumbens L.

SPIGELIA L.

Spigelia anthelmia L.

Spigelia Humboldtiana Cham. & Schlecht. *Lombricera* (Central America generally). A small herb, much used in some parts of tropical America to expel tapeworms and other intestinal parasites.

Spigelia polystachya Klotzsch. Big Fall, Belize River, *Lundell* 1971.

STRYCHNOS L.

Slender woody vines, often provided with tendrils; leaves entire, with 3 or 5 conspicuous nerves, broadly ovate or oval, acute or acuminate; flowers white or yellowish, the corolla salverform, its tube long and very slender; fruit globose, with a hard shell, commonly 4 cm. in diameter or larger. From Old World species of the genus are obtained the drugs strychnine and nux vomica. American members of the group probably have similar properties. *Strychnos toxifera*, of Panama and South America, supplies at least one of the ingredients of the drug curare, employed by the aborigines for poisoning their arrows.

Leaves large, thick and leathery; corolla densely tomentose, 1 cm. long.....*S. Peckii.*

Leaves small, thin; corolla glabrous outside, or sparsely pilose, 1.5–2 cm. long.....*S. panamensis.*

Strychnos panamensis Seem. *Snake Seed, Tietie. Chicoloro. Luch maax* (Maya). *Guaco* (Honduras). Apparently frequent in British Honduras; extending southward to Panama. A slender, almost glabrous vine; leaves chiefly 4–7 cm. long; fruits 4–8 cm. in diameter.

Strychnos panamensis var. **hirtiflora** Standl. Field Mus. Bot. 11: 138. 1932. Type from Nineteen Mile, Stann Creek Valley, *Schipp* S301. In the usual form of the species the corolla is glabrous or pruinose-puberulent, in this it is sparsely hirsute. Described as a vine 10 meters long, the stem 2.5 cm. thick; flowers cream-colored.

Strychnos Peckii Robinson, Proc. Amer. Acad. 49: 504. 1913. *Tietie.* Type from Sittee River, in forest, *Peck* 856; Mullins River Road, *Schipp* 121. A coarse vine 12 meters long, the trunk 10 cm. in diameter; leaves as much as 17 cm. long, conspicuously 5-nerved; flowers white, sweet-scented. The vine climbs by means of stout hooks formed by the hardened tendrils. Schipp reports that the fruit is edible.

GENTIANACEAE. Gentian Family

CENTAURIUM Gilib.

Centaurium Pringleanum (Wittr.) Robinson. All Pines, *Schipp;* Honduras and Mexico. The determination of the single collection from British Honduras is somewhat uncertain.

CHELONANTHUS (Griseb.) Gilg

Chelonanthus alatus (Aubl.) Gilg.

COUTOUBEA Aubl.

Coutoubea spicata Aubl.

EUSTOMA Salisb.

Eustoma exaltatum (L.) Griseb.

LEIPHAIMOS Schlecht. & Cham.

Leiphaimos mexicana (Griseb.) Miq. A small white saprophytic plant.

Leiphaimos simplex (Griseb.) Standl. Corolla blue.

LISIANTHUS L.

Lisianthus axillaris (Hemsl.) Kuntze.

Lisianthus collinus Standl. Carnegie Inst. Wash. Publ. 461: 81. 1935. Type from Jacinto Hills, *Schipp* 1205.

SCHULTESIA Mart.

Schultesia guianensis (Aubl.) Malme. New Town, *Schipp* 814; also collected by Peck.

Schultesia heterophylla Miq. All Pines, *Schipp* 774.

Schultesia lisianthoides (Griseb.) Benth. & Hook.

Schultesia Peckiana Robinson, Proc. Amer. Acad. 45: 399. 1910. Type collected near Manatee Lagoon, *Peck* 318.

Schultesia stenophylla Mart. All Pines, Honey Camp.

MENYANTHACEAE. Buckbean Family

LIMNANTHEMUM Gmel.

Limnanthemum Humboldtianum (HBK.) Griseb. An aquatic plant.

APOCYNACEAE. Dogbane Family

Shrubs or trees, sometimes herbs, often scandent, with milky latex; leaves entire, without stipules; flowers mostly in terminal or lateral cymes, large or small, perfect, regular; calyx inferior, the segments united at the base, often glandular within, usually 5-parted; corolla of united petals, salverform or funnelform; stamens 5,

inserted on the tube or throat of the corolla, with short filaments, the anthers narrow, frequently appendaged at the base; fruit of 1 or 2 carpels, these dry or fleshy, opening or indehiscent. In several genera here listed the species have not been keyed or described, because the plants are chiefly herbs, or at best only slightly woody, or with very slender stems.

Leaves alternate. Erect shrubs or trees.

Corolla salverform, the tube slender; fruit opening at maturity. *Plumeria.*

Corolla funnelform, the tube broadened above; fruit not opening. *Thevetia.*

Leaves opposite or whorled.

Leaves whorled, with 3 or more in a whorl.

Plants climbing; fruit prickly; flowers yellow..... *Allamanda.*

Plants erect; fruit unarmed; flowers not yellow.

Fruit dry; cultivated shrubs..... *Nerium.*

Fruit fleshy, berry-like; native plants.

Ovary of 2 carpels; shrubs..... *Rauwolfia.*

Ovary of 1 carpel; trees..... *Couma.*

Leaves opposite.

Plants erect trees or shrubs.

Leaves very obtuse or rounded at the apex, 3.5 cm. long or less..... *Cameraria.*

Leaves acute or acuminate, much larger.

Inflorescence tomentose, the minute flowers in panicled cymes; fruit dry, strongly compressed; seeds broadly winged..... *Aspidosperma.*

Inflorescence not tomentose; fruit fleshy; seeds not winged.

Ovary of a single carpel; flowers white, with a slender tube, in axillary cymes..... *Lacmellea.*

Ovary of 2 carpels.

Anther cells appendaged at the base. Flowers small, in small axillary cymes..... *Malouetia.*

Anther cells not appendaged at the base.

Corolla buff, large; carpels of the fruit 7 cm. long or larger..... *Stemmadenia.*

Corolla white, small; fruit much smaller. *Tabernaemontana.*

Plants climbing shrubs or herbs.
Tips of the anthers exserted from the corolla.
Corolla with a very short tube; leaves glabrous. *Forsteronia.*
Corolla with an elongate tube; leaves densely pubescent. *Prestonia.*
Tips of the anthers not exserted.
Corolla salverform, with a slender tube.
Leaves non-glandular; anthers with slender or attenuate basal lobes. *Echites.*
Leaves glandular along the midrib above, at least at the base; anthers truncate, or with blunt and relatively obscure basal lobes.
Inflorescence dichotomous or trichotomous; stigma fusiform. *Mesechites.*
Inflorescence simply racemose; stigma umbraculiform. *Mandevilla.*
Corolla funnelform, the tube broadened above.
Calyx without glands. *Rhabdadenia.*
Calyx glandular within.
Flowers in large terminal panicles; leaves glabrous. *Odontadenia.*
Flowers in axillary racemes; leaves hairy beneath. *Urechites.*

ALLAMANDA L.

Allamanda cathartica L. Frequent in thickets, chiefly in coastal swamps; Central and South America. A large glabrous woody vine; leaves mostly in whorls of 3–4, oblong to obovate, acuminate, somewhat leathery; corolla bright yellow, trumpet-shaped, 7–9 cm. long; fruit rounded and compressed, 4–6 cm. broad, covered with long flexible spines. A showy and handsome vine, often cultivated for ornament in tropical and subtropical regions.

ASPIDOSPERMA Mart. & Zucc.

Aspidosperma megalocarpon Muell. Arg. *My Lady, Malady. Chichique, Chichica* (Guatemala). Occasional in forest; Mexico to Panama. A large tree; leaves opposite, oblong, large, short-stalked, acuminate, leathery, glabrous in age; flowers 6 mm. long, in panicled cymes, the inflorescence tomentose; fruit dry, obovate, compressed, somewhat oblique, 12–16 cm. long, contracted into a stout

stalk, densely tomentose; seeds compressed, the body 2–2.5 cm. wide, surrounded by a broad thin wing, the whole seed 7–9 cm. broad. Wood pinkish yellow, hard, heavy, tough, splintery, rather coarse-textured, fairly durable; used for railway crossties, house frames, scaffolding, and rafting poles.

CAMERARIA L.

Cameraria belizensis Standl. Trop. Woods 7: 8. 1926. *Savanna White Poisonwood. Chechem de Caballo.* Type from Honey Camp Lagoon, *Record;* Honey Camp, *Lundell, D. Stevenson.* A small tree with ashy gray bark; leaves small, short-stalked, ovate-oval, 2–3.5 cm. long, rounded at base and apex, leathery, glabrous; flowers terminal, solitary; corolla white, 12–14 mm. long. The plant is reported to be exceedingly poisonous if in contact with the body, producing serious swelling and inflammation. No other member of the genus is known from the North American continent, the rest of the species being West Indian. Wood pale olive, hard, heavy, fine-textured, finishes very smoothly, not durable; not utilized.

CATHARANTHUS G. Don

Catharanthus roseus (L.) G. Don doubtless occurs in British Honduras, as an escape from cultivation.

COUMA Aubl.

A South American genus, represented in North America by the following species:

Couma guatemalensis Standl. *Barca. Palo de Vaca* (Guatemala). Temash River, broken ridge bush, *M. O. Hope* 17; Atlantic lowlands of Guatemala. A large or medium-sized tree with thick, dark-colored bark; leaves in whorls of 3, short-stalked, broadly ovate to rounded-elliptic, thick, abruptly short-pointed, glabrous or nearly so, pale beneath, with numerous conspicuous lateral nerves; flowers pink, almost 2 cm. long, in dense axillary cymes; fruit subglobose, 2.5 cm. in diameter. One of the most interesting of Central American trees, and one that has received much publicity in periodical literature. When the bark of the Cow Tree is cut or broken, there issues from it a rich creamy latex that is sweet and palatable. It is not very sticky, and may be drunk like cow's milk. Wood dull brown, moderately hard, of medium texture and fairly straight grain, not difficult to work. (See *Trop.*

Woods 7: 13. 1926.) Hope reports that the latex is used as a chicle substitute, and that the tree is used sometimes by the bushmen for making a tea-like infusion.

ECHITES Jacq.

Echites tuxtlensis Standl. Honey Camp, *Lundell* 37.

Echites umbellata Jacq.

Echites yucatanensis Millsp. Tower Hill, *Karling* 28; Yucatan.

FORSTERONIA Meyer

Woody vines, the leaves opposite, often with glands near the base; flowers small, in dense cymes, panicles, or thyrses; corolla rotate or nearly so, with a very short tube; fruit of two long slender follicles.

Corolla glabrous.....*F. myriantha.*

Corolla puberulent outside.

Anthers wholly exserted.....*F. peninsularis.*

Anthers with only their tips exserted.....*F. viridescens.*

Forsteronia myriantha Donn. Smith. Temash River, *Schipp* 1315; extending to Panama. A vine 12 meters long, the stem 5 cm. in diameter; leaves glabrous or slightly pilose; flowers greenish yellow.

Forsteronia peninsularis Woodson, Ann. Mo. Bot. Gard. 22: 215. 1935. Type from Maskall, Northern River, *Gentle* 1281. Leaves glabrous; flowers greenish white.

Forsteronia viridescens Blake, Contr. Gray Herb. 52: 80. 1917. *Tietie.* Type from forest near Manatee Lagoon, *Peck* 450; Middlesex, *Schipp* 360. A large woody vine, the trunk as much as 5 cm. in diameter; leaves short-stalked, oval to oblong, somewhat leathery, acute or acuminate, glabrous; flowers cymose-paniculate, white, the corolla 3.5 mm. long.

LACMELLEA Karst.

Lacmellea edulis Karst. *Cow Tree. Palo de Vaca.* Río Blanco, *N. S. Stevenson* 120 (Yale 14902); Río Grande, river bank, *Schipp* 1234; Panama, Colombia. A small or medium-sized tree, as much as 9 meters high, with trunk diameter of 25 cm.; leaves short-stalked, oblong, acuminate, glabrous; flowers white, in dense axillary cymes, the tube long and slender, the lobes short; fruit

globose, orange or yellow, 2 cm. long. Latex abundant; wood soft and white. The fruit is reported to be sweet, and to be eaten in Colombia.

MALOUETIA A. DC.

Malouetia guatemalensis (Muell. Arg.) Standl. In forest; southward to Panama. A glabrous tree 6–9 meters high; leaves opposite, short-stalked, elliptic or ovate, long-acuminate, rather leathery, glabrous; flowers white, 12 mm. long, clustered in the leaf axils.

MANDEVILLA Lindl.

Mandevilla hirsuta (A. Rich.) Schum. *M. denticulata* Blake, Contr. Gray Herb. 52: 81. 1917. Type of *M. denticulata* from New Haven, *Peck* 696; Middlesex, *Schipp* S6.

Mandevilla subsagittata (A. DC.) Woodson. *Echites cuspidifera* Blake, Contr. Gray Herb. 52: 79. 1917. Type of *E. cuspidifera* from Manatee Lagoon, *Peck* 35.

MESECHITES Muell. Arg.

Mesechites trifida (Jacq.) Muell. Arg.

NERIUM L. Oleander

Nerium Oleander L. *Narciso* (Central America). Cultivated and perhaps becoming naturalized; native of the Old World.

ODONTADENIA Benth.

Odontadenia Hoffmannseggiana (Steud.) Woodson. *O. speciosa* Benth. Middlesex, *Schipp;* ranging to South America. A large glabrous woody vine as much as 12 meters long; leaves opposite, short-stalked, large, oblong to elliptic; flowers bright yellow, 5 cm. long, in large cymes.

Odontadenia Schippii Woodson, Ann. Mo. Bot. Gard. 22: 292. 1935. Type from Camp 36, Guatemalan boundary, *Schipp* S709. A woody vine 25 meters long, the trunk 10 cm. in diameter; corolla creamy white, about 5 cm. long.

PLUMERIA L. Frangipani

Shrubs or trees with thick branches; leaves alternate, stalked; flowers large, in terminal cymes; calyx 5-cleft; corolla salverform, with a slender tube; fruit of 2 large divergent many-seeded pods, the seeds flat, winged.

Leaves broadly rounded at the apex, densely tomentose beneath. *P. multiflora.*

Leaves acute or acuminate, glabrous.

Corolla white..... *P. acutifolia.*

Corolla red..... *P. rubra.*

Plumeria acutifolia Poir. Jacinto Hills, *Schipp* S592; widely distributed in tropical America. A tree of 10 meters or less, the trunk as much as 25 cm. in diameter; leaves oblong to elliptic, 15–30 cm. long or larger; corolla 6–7 cm. long. A very handsome and showy tree when in flower, usually blooming when leafless.

Plumeria multiflora Standl. *Zopilote.* Honey Camp, *Lundell;* Yucatan. A shrub or small tree; leaves wedge-shaped, tapering to the base, glabrous on the upper surface; corolla 4 cm. long.

Plumeria rubra L. *Flor de Mayo* (Yucatan). *Nicte* (Yucatan, Maya). Roaring Creek, *Lundell;* widely distributed in tropical America, at least in cultivation. A shrub or small tree, glabrous or nearly so; leaves elliptic-oblong; corolla red or purple, 3.5–5.5 cm. long.

PRESTONIA R. Br.

Climbing shrubs or herbs; leaves opposite, petioled; flowers in pseudo-axillary cymes; calyx with broad or narrow sepals; corolla salverform, with a slender tube; anthers half exserted from the corolla; fruit of 2 long pods.

Leaves obtuse or rounded at the base, almost glabrous.. *P. concolor.*

Leaves cordate at the base, densely pubescent..... *P. mexicana.*

Prestonia concolor (Blake) Woodson, comb. nov. *Belandra concolor* Blake, Contr. Gray Herb. 52: 78. 1917. Type from low bank of Río Grande, *Peck* 953; Eldorado; Machaca. A large, somewhat woody vine; leaves stalked, oblong or oval; corolla cream-colored, 3 cm. long.

Prestonia mexicana (A. DC.) Hemsl. Stann Creek Valley, *Schipp* S7, in open grassland; Mexico and Central America. A small woody vine; leaves almost sessile, broadly elliptic, short-pointed, densely tawny-pubescent; corolla cream-colored, 4 cm. long; pods thick, divaricate, 8 cm. long.

RAUWOLFIA L.

Rauwolfia canescens L. Occasional in thickets or open places; widely distributed in tropical America. A slender shrub; leaves small, in whorls of 3–5, oblong to elliptic-obovate, acute or obtuse

at each end, densely pubescent beneath; flowers whitish, in small axillary cymes, the corolla 4 mm. long; drupes black, 6–8 mm. in diameter. The fruit is said to be poisonous.

RHABDADENIA Muell. Arg.

More or less woody vines; leaves opposite, stalked; flowers large, in few-flowered racemes; calyx 5-parted; corolla funnelform, the throat long-campanulate; fruit of 2 long slender pods, each seed with a terminal tuft of hairs.

Leaves mostly oblong and acute at the base; calyx lobes obtuse. *R. paludosa.*

Leaves elliptic, mostly rounded at the base; calyx lobes acuminate. *R. cordata.*

Rhabdadenia cordata (Mill.) Miers. Occasional in thickets, especially mangrove swamps; Mexico. Stems sometimes 6 meters long, slender; leaves thin, acuminate, conspicuously veined, sparsely pubescent beneath or almost glabrous; corolla yellow, 6–7 cm. long.

Rhabdadenia paludosa (Vahl) Miers. In mangrove swamps; widely distributed in tropical America. A small glabrous vine; leaves leathery, obtuse or rounded at the apex, the veins obscure; corolla pale pink or white, 6–7 cm. long.

STEMMADENIA Benth.

Stemmadenia Donnell-Smithii (Rose) Woodson. *Cojotón.* Frequent in thickets and forest; ranging to Honduras and Salvador. A tree as much as 15 meters high, with trunk diameter of 30 cm., but usually much smaller; leaves opposite, almost sessile, obovate-oblong, acuminate, tapering to the base, almost glabrous; flowers in small cymes; corolla buff, 3.5 cm. long; fruit heavy, consisting of two fleshy, very thick, rounded pods 7 cm. long or larger. The tree is conspicuous because of its unusually large fruits, which often bend the branches sharply downward. The sticky latex is employed in Salvador for fastening cigarette wrappers, and the plant finds various uses in domestic medicine. Its latex contains a substance having the same properties as gutta-percha. Wood light brown, rather light but firm and strong, fine-textured, easy to work, not durable; not utilized.

TABERNAEMONTANA L.

Shrubs or trees, glabrous or nearly so; leaves opposite; flowers rather small, in terminal or sublateral cymes, white or pale yellow;

calyx 5-lobed; corolla salverform, with slender tube; fruit of 2 short fleshy pods. Wood yellowish, only moderately hard, fine-textured, easy to work, not durable; not utilized.

Cymes conspicuously stalked.....*T. citrifolia.*
Cymes sessile or practically so.....*T. arborea.*

Tabernaemontana arborea Rose. *Cojotón. T. Schippii* Standl. Field Mus. Bot. 8: 34. 1930. Common in forest in the southern part of the Colony; southward to Panama. A glabrous tree 10–15 meters high, with a trunk as much as 30 cm. in diameter; leaves oblong or oblanceolate-oblong, acute or acuminate, tapering to the base, often very lustrous on the upper surface; flowers slender-stalked, in small clustered cymes, the corolla white, its tube almost 1 cm. long, the spreading lobes of equal length.

Tabernaemontana citrifolia L. *Cojotón, Cojón de Mico, Cojón de Perro. T. chrysocarpa* Blake, Contr. Gray Herb. 52: 81. 1917 (type from Manatee Lagoon, *Peck* 118). Frequent in thickets or forest; widely distributed in tropical America. Reported as a tree of 9 meters with trunk diameter of 10 cm., but usually only a large shrub, glabrous; leaves mostly obtuse or even rounded at the apex and abruptly narrow-pointed, usually not lustrous; peduncles often much elongated in fruit; flowers white.

THEVETIA Adans.

Shrubs or small trees; leaves alternate, thick; flowers large, yellow, in terminal cymes; calyx 5-parted; corolla funnelform; fruit drupaceous, broader than long, obcompressed, the endocarp nut-like, 2-celled.

Leaves minutely rough-pubescent beneath, mostly 5–8 cm. wide. *T. nitida.*
Leaves glabrous, 2 cm. wide or less.....*T. Gaumeri.*

Thevetia Gaumeri Hemsl. *Willow, Good-luck Seed. Acitch* (Maya). Corozal District, Honey Camp; Yucatan. A glabrous shrub or small tree; leaves oblanceolate-linear, obtuse or acute, lustrous; corolla 3.5–5 cm. long; fruit about 3 cm. broad.

Thevetia nitida (HBK.) A. DC. *Cogotone. Cojotón, Cojón de Perro, Cojón de Mico.* Common in forest and thickets; southern Mexico to Colombia. A shrub or tree as much as 6 meters high; leaves short-stalked, oblanceolate-oblong, abruptly short-pointed, dark green; flowers 2.5 cm. long; fruit fleshy, 3–6 cm. broad, bright red or purple at maturity. In the regions where it grows, the plant usually is regarded as poisonous.

URECHITES Muell. Arg.

Urechites Andrieuxii Muell. Arg. Honey Camp, *Lundell.*

ASCLEPIADACEAE. Milkweed Family

ASCLEPIAS L. Milkweed

Asclepias curassavica L. *Polly Redhead. Viborana* (Honduras).

BLEPHARODON Dcne.

Blepharodon mucronatum (Schlecht.) Dcne.

FISCHERIA DC.

Fischeria Briquetiana Standl. Field Mus. Bot. 11: 139. 1932. Type from Stann Creek Valley, Nineteen Mile, along creek banks in partial sunlight, *Schipp* 962; Jacinto, *Schipp* S647.

FUNASTRUM Fourn.

Funastrum clausum (Jacq.) Schlecht.

Funastrum elegans (Dcne.) Schlecht. Honey Camp, *Lundell.*

Funastrum odoratum (Hemsl.) Schlecht. Reported by Lundell from the northern part of the Colony.

MARSDENIA R. Br.

Marsdenia laxiflora Donn. Smith. Sand Hill, *Schipp* 1027.

METASTELMA R. Br.

Metastelma pedunculare Dcne.

VINCETOXICUM Walt.

Vincetoxicum cteniophorum Blake, Contr. Gray Herb. 52: 84. 1917. Type from Toledo, *Peck* 821.

Vincetoxicum dasystephanum Blake, Contr. Gray Herb. 52: 84. 1917. Type collected near Manatee Lagoon, *Peck* 323.

Vincetoxicum grandiflorum Standl. Carnegie Inst. Wash. Publ. 461: 83. 1935. Type from Machaca, *Schipp* S575. Also in Guatemala.

Vincetoxicum Lundellii Standl. Field Mus. Bot. 8: 148. 1930. Type from Honey Camp, *Lundell* 540; Malfredi Lagoon, *Schipp* S646.

Vincetoxicum macranthum (Kunze) Standl. Stann Creek Valley, *Schipp* 954.

Vincetoxicum Salvinii (Hemsl.) Standl. Temash River, on river banks, *Schipp* 1355.

Vincetoxicum Schippii Standl. Field Mus. Bot. 8: 37. 1930. Type from Middlesex, *Schipp* S19.

Vincetoxicum stenanthum Standl. Field Mus. Bot. 4: 255. 1929. *Cuchamper* (Honduras). Type from Tower Hill, *Karling* 27; Honduras.

CONVOLVULACEAE. Morning-glory Family

The family consists almost wholly of herbaceous plants. The local exceptions are indicated in the following list.

ANISEIA Choisy

Aniseia martinicensis (Jacq.) Choisy. All Pines, *Schipp* S145.

CALONYCTION Choisy. Moon Vine

Calonyction aculeatum (L.) House. Flowers white.

Calonyction clavatum Don. *Gloria de la Mañana.* Corozal District, *Gentle* 325. Flowers blue.

EVOLVULUS L.

Evolvulus alsinoides L.

Evolvulus nummularius L.

Evolvulus sericeus Swartz. The var. *glaberrimus* Robinson (Proc. Amer. Acad. 45: 400. 1910) is a glabrous form, based on *Peck* 372 from low pine ridge near Manatee Lagoon.

IPOMOEA L. Morning-glory

Ipomoea aegyptia L. Honey Camp.

Ipomoea aphylla Standl. Field Mus. Bot. 11: 139. 1933. Type from pine ridge, Cornhouse Creek, Manatee River, *Bartlett* 11316; All Pines, *Schipp* 547.

Ipomoea Batatas (L.) Lam. *Sweet Potato. Camote. Iz* (Yucatan, Maya). Cultivated and naturalized.

Ipomoea callida House. Stann Creek, *Schipp* 495.

Ipomoea cathartica Poir. *Gloria de la Mañana. Campanilla* (Honduras).

Ipomoea cissoides (Lam.) Griseb. *Kixolok* (Yucatan, Maya). Honey Camp.

Ipomoea confertiflora Standl. Carnegie Inst. Wash. Publ. 461: 83. 1935. Type from Río Grande, *Schipp* 1236.

Ipomoea crassicaulis (Benth.) Robinson. Corozal, *Gentle* 4775. A tall erect plant with showy pink flowers, sometimes shrub-like.

Ipomoea dasysperma Jacq.

Ipomoea Meyeri (Spreng.) Don. *Camotillo.* Corozal District, *Gentle* 310.

Ipomoea minutiflora (Mart. & Gal.) House. All Pines.

Ipomoea Morelii Duch. & Walp. El Cayo, *Chanek* 175, 205, 216.

Ipomoea Nil (L.) Roth. Corozal-Xiabe Road, *Gentle* 841.

Ipomoea Pes-caprae (L.) Roth. *Goatfoot Morning-glory.* A common and characteristic plant of sea beaches.

Ipomoea polyanthes Roem. & Schult. Flowers yellow.

Ipomoea quinquefolia L. *White Cowslip.* All Pines.

Ipomoea sagittata Lam. Pueblo Nuevo, *Gentle* 4896.

Ipomoea setosa Ker, var. **campanulata** (Hallier) House. Caves, Stann Creek Railway, *Schipp* 878.

Ipomoea stolonifera (Cyrill.) Poir. Stann Creek. A strand plant.

Ipomoea tiliacea (Willd.) Choisy. *Hebil* (Yucatan, Maya).

Ipomoea triloba L. Honey Camp.

Ipomoea tuxtlensis House. Honey Camp.

JACQUEMONTIA Choisy

Jacquemontia Houseana Standl. Field Mus. Bot. 11: 140. 1932. Type from El Cayo, *Bartlett* 12928.

Jacquemontia nodiflora (Desr.) Don. El Cayo, *Chanek* 132.

Jacquemontia pentantha (Jacq.) Don. San Andrés, Corozal, *Gentle* 551.

Jacquemontia Perryana Duch. & Walp.

Jacquemontia tamnifolia (L.) Griseb. Honey Camp.

LYSIOSTYLES Benth.

Lysiostyles sericea Standl. Machaca, *Schipp* 1210; Honduras. A slender climbing shrub; leaves petiolate, elliptic-oblong or elliptic-ovate, obtuse or acute, glabrous above, densely sericeous beneath;

inflorescences axillary, raceme-like, few-flowered, the small flowers greenish.

MARIPA Aubl.

Maripa nicaraguensis Hemsl. Middlesex, in forest, *Schipp* S14; ranging to Nicaragua. A large woody vine, glabrous or nearly so; leaves short-petiolate, alternate, oblong, entire, acute or acuminate, obtuse at the base; flowers rather small, in stalked many-flowered cymes; fruit large, ellipsoid, hard, indehiscent.

OPERCULINA Manso

Operculina tuberosa (L.) Meisn. *Seven Fingers.*

QUAMOCLIT Moench

Quamoclit coccinea (L.) Moench. *Indian Creeper. Cundeamor* (Central America).

RIVEA Choisy

Rivea campanulata (L.) House. Stann Creek Valley. In some parts of Central America the sap of this vine is employed for coagulating rubber latex.

TURBINA Raf.

Turbina corymbosa (L.) Raf. Corozal District. A glabrous, somewhat woody vine.

CUSCUTACEAE. Dodder Family

CUSCUTA L. Dodder

Cuscuta indecora Choisy. Malfredi Lagoon, *Schipp* 1161. A slender yellow twining leafless parasite, with white flowers.

HYDROPHYLLACEAE. Waterleaf Family

HYDROLEA L.

Hydrolea spinosa L. A spiny herb of wet soil; corolla blue.

BORAGINACEAE. Borage Family

Herbs, shrubs, or trees, often with coarse rough pubescence; leaves chiefly alternate, entire or toothed, without stipules; flowers perfect, large or small, the corolla of united petals, usually 5-lobed, regular or nearly so; ovary superior; stamens as many as the corolla lobes and inserted alternate with them on the tube; fruit a drupe, or of 2 or 4 dry nutlets.

Fruit dry; herbs..... *Heliotropium.*

Fruit fleshy; shrubs or trees.

Flowers in one-sided spikes or racemes, these often arranged in cymes..... *Tournefortia.*

Flowers not in one-sided spikes or racemes.

Style twice bifid. Leaves toothed or entire; flowers sometimes in heads or spikes; calyx often tubular or striate. *Cordia.*

Style once bifid. Leaves entire; flowers in corymb-like cymes; calyx bell-shaped, not striate.

Calyx closed in bud, in flower 2–5-lobed..... *Beureria.*

Calyx open in bud, 5-parted..... *Ehretia.*

BEURERIA Jacq.

Shrubs or trees; leaves alternate, petiolate, entire; flowers white, in terminal corymb-like cymes; calyx campanulate, 2–5-lobed, the lobes valvate in bud; corolla salverform; styles 2-cleft; fruit a drupe, containing 4 hard nutlets.

Leaves densely and softly pubescent..... *B. mollis.*

Leaves glabrous or nearly so..... *B. oxyphylla.*

Beureria mollis Standl. Trop. Woods 8: 5. 1926. *Black Fiddlewood. Opay, Roble, Beheck.* Type collected by Winzerling, III.12, without locality; Hillbank, *C. S. Brown.* A tree; leaves elliptic, abruptly acute or obtuse, glabrate above; branches of the panicle tomentose; calyx 5 mm. long, densely tomentose; stamens exserted.

Beureria oxyphylla Standl. Trop. Woods 16: 40. 1928. *Roble, Laurel, Sombra de Ternero. Sacbayeck* (Maya). Type from San José, northwestern Cayo District; Honey Camp, Freshwater Creek, Yoloch, Hillbank, Tower Hill Estate, Vaca; also in Honduras. A small tree, almost glabrous; leaves small, chiefly oblong, sometimes elliptic, acute or acuminate, thick; cymes mostly small and dense; calyx pubescent or glabrate.

CORDIA L.

Shrubs or trees; leaves entire or toothed, usually with rough pubescence, chiefly alternate; flowers small or large, in cymes, heads, or spikes; calyx tubular or campanulate, usually 4–6-lobed; style twice bifid; fruit a drupe.

Flowers in heads or spikes.

Flowers in small heads..... *C. corymbosa.*

Flowers in spikes.
Spikes much interrupted; leaves ovate, acuminate.*C. ferruginea.*
Spikes usually dense; leaves oblong or lanceolate.*C. curassavica.*
Flowers not in spikes or heads.
Pubescence of fine stellate hairs.....*C. alliodora.*
Pubescence none or of simple hairs.
Flowers large, the calyx 1 cm. long or larger.
Leaves very rough.....*C. dodecandra.*
Leaves smooth, glabrous.....*C. Gerascanthus.*
Flowers small, the calyx 5 mm. long or less.
Calyx conspicuously ribbed.
Leaves rounded to acute at the apex; calyx bell-shaped. *C. alba.*
Leaves long-acuminate; calyx tubular.....*C. diversifolia.*
Calyx not ribbed.
Calyx glabrous.....*C. nitida.*
Calyx pubescent.
Leaves covered beneath with a fine, pale, very dense pubescence.....*C. bicolor.*
Leaves glabrous beneath or nearly so.....*C. glabra.*

Cordia alba (Jacq.) Roem. & Schult. *Jack Wood. Chachalaco* (Honduras). Occasional in thickets; Mexico to northern South America. A small or medium-sized tree with low, rounded or spreading crown; leaves ovate to rounded, very rough, inconspicuously toothed or almost entire; flowers white, 1 cm. long, in large panicled cymes; calyx 3–4 mm. long; fruit white, 1 cm. long. A rather showy tree when in blossom; abundant in the drier regions of Central America. The translucent fruits have a sticky pulp that is extremely sweet. They are much eaten by birds and sometimes by people. Wood brownish, rather light, firm, fibrous, tough, not durable; not utilized.

Cordia alliodora (Ruiz & Pavón) Cham. *Salmwood, Salaam* (Schipp). *Laurel Blanco. Bohun* (Maya). Frequent in forest; widely distributed in tropical America. A large or medium-sized tree; leaves mostly elliptic-oblong, acuminate, entire; flowers small, white, fragrant, in large panicles; calyx 5 mm. long; fruit small, white. An exceptionally showy tree, because of the abundance of handsome blossoms, which turn brown before they fall; common in the lowlands of Central America. The crushed foliage has an odor suggestive of

garlic, hence the Latin name of the species. The joints of the branchlets nearly always are swollen and inhabited by tiny ants whose bite causes acute pain. Wood apparently of two kinds (perhaps depending upon age of tree or locality of growth), namely, (1) grayish or yellowish and (2) variegated brown, suggesting Walnut (*Juglans*), and frequently scented when fresh; easy to work, finishes smoothly, holds its place well when manufactured, used for logging truck parts, piling, railway crossties, and furniture, especially lining to repel insects.

Cordia bicolor A. DC. Big Creek, in forest, *Schipp* 185; ranging to South America. A tree 9 meters high, with a trunk 12 cm. in diameter; leaves large, rough, almost sessile, ovate-oblong, long-acuminate, entire; flowers small, in large open panicles, white.

Cordia corymbosa (L.) Don. Occasional in thickets; Mexico to South America. A slender shrub 3.5 meters high or less; leaves small, almost sessile, lance-oblong, long-acuminate, toothed, rough; flower heads less than 1 cm. in diameter, slender-stalked.

Cordia curassavica (Jacq.) Roem. & Schult. *Kopche* (Yucatan, Maya). Frequent in thickets; Mexico to northern South America. A stiff shrub or very small tree; leaves small, more or less toothed, very rough; flowers small, white. There is some question as to the proper name for this species. It has been referred incorrectly to the Peruvian *C. cylindrostachya* (Ruiz & Pavón) Roem. & Schult, and it is possible that it is distinct from true *C. curassavica*.

Cordia diversifolia Pavón. *Tigüilote* (Honduras), *Upay* (Guatemala). Sittee River and elsewhere; southern Mexico to Panama. A shrub or a tree of 7 meters, with trunk diameter of 7 cm.; leaves mostly oblanceolate-oblong, entire, very rough; branches hirsute; flowers white, in small or large panicles.

Cordia dodecandra DC. *Siricote, Chackopte* (Yucatan, Maya). Frequent in the northern part of the Colony; Guatemala, Yucatan, and Chiapas. A large tree, sometimes 30 meters high; leaves oblong to rounded, large, entire or nearly so; flowers orange-red, 5 cm. long, in small cymes; fruit ovoid, yellowish, 5 cm. long. The somewhat acid fruits are edible. Heartwood brownish, often with irregular black markings; hard, heavy, strong, medium-textured, finishes smoothly; suitable for fine furniture and turned articles. (See *T. of T. A.*, pp. 516–518.)

Cordia ferruginea (Lam.) Roem. & Schult. *Carne Asada* (Honduras). San Antonio; widely distributed in tropical America.

A shrub 1.5–2.5 meters high; leaves rough on the upper surface; flowers small, greenish white, in long spikes.

Cordia Gerascanthus L. *Laurel Negro. Bohonche, Bohunche* (Maya). Occasional in forest; Yucatan Peninsula to Honduras; West Indies. A large tree; leaves elliptic-oblong, acute or acuminate, entire; flowers white, fragrant, in dense cymes.

Cordia glabra L. *Bastard Salmwood. C. collococca* L. Hillbank, Forest Home; Central America and West Indies. A tree 9–12 meters high, the trunk 30–40 cm. in diameter; leaves oblong to obovate, entire or nearly so, obtuse to acuminate; flowers white, fragrant, in lax panicles, the calyx 2–3 mm. long; fruit cherry-red, almost 1 cm. long.

Cordia nitida Vahl. *Sombra de Ternero* (Honduras). Occasional in forest; Central America and West Indies. A small or medium-sized tree; leaves elliptic to oblong, entire, acute to long-acuminate; flowers white, 5 mm. long, in small cymes; fruit creamy white, 1–1.5 cm. long.

EHRETIA L.

Ehretia tinifolia L. *Roble* (Yucatan). *Bec* (Yucatan, Maya). Corozal, *Gentle* 40, 4793; Mexico, West Indies. A small or medium-sized tree, the trunk 20 cm. in diameter; leaves short-stalked, oblong to ovate or elliptic, obtuse or acute, glabrous, entire; flowers 4 mm. long, white, in large panicles; fruit red or purple, 5–6 mm. in diameter. The fruit is edible.

HELIOTROPIUM L.

Heliotropium angiospermum Murr. *Scorpion Tail. Nemax* (Yucatan, Maya).

Heliotropium filiforme Lehm. Maskall, *Gentle* 1315.

Heliotropium indicum L. *Cola de Alacrán* (Honduras). *Nemax* (Yucatan, Maya).

Heliotropium phyllostachyum Torr. Reported as collected by Peck.

Heliotropium procumbens Mill.

TOURNEFORTIA L.

Herbs or more often shrubs, mostly reclining on other plants or often scandent; leaves entire; flowers small, in one-sided spikes or racemes disposed in cymes; calyx 5-parted; stamens included; fruit drupaceous, small, containing 4 nutlets.

Leaves linear or nearly so, very obtuse, covered with a very dense, grayish pubescence.....*T. gnaphalodes.*

Leaves lanceolate to elliptic, acute or acuminate, not densely grayish-hairy.

Branches densely hirsute.....*T. hirsutissima.*

Branches glabrous or nearly so.

Leaves obtuse or rounded at the base; corolla lobes obtuse. *T. bicolor.*

Leaves long-attenuate at the base; corolla lobes attenuate. *T. glabra.*

Tournefortia bicolor Swartz. Occasional in forest or thickets; widely distributed in tropical America. A shrub or a large woody vine; leaves glabrous; flowers white, 8 mm. long; fruit 4 mm. long, white.

Tournefortia glabra L. In thickets; Mexico, Central America, West Indies. An erect shrub 3 meters high, or often with recurved branches; leaves large and thin, glabrate; flowers pale green, 6–7 mm. long; fruit 3 mm. long, white.

Tournefortia gnaphalodes (L.) R. Br. *Sicimay* (Yucatan, Maya). Freshwater Cay, *Schipp;* Yucatan, Florida, West Indies; growing on seashores. A shrub 1–1.5 meters high, covered with whitish silky pubescence; inflorescence small, dense, almost head-like; fruit black, 5 mm. long.

Tournefortia hirsutissima L. Occasional in thickets; widely distributed in tropical America. A coarse shrub, often more or less scandent, densely rough-hairy throughout.

VERBENACEAE. Teak Family

Herbs, shrubs, or trees, sometimes vines; leaves chiefly opposite and simple, toothed or entire; flowers small or large, regular or very irregular; ovary superior; calyx 2–5-lobed, the corolla 4–5-lobed; stamens usually 4 and in pairs, sometimes 2 or 5; fruit a fleshy drupe, or dry and separating into 2 or 4 nutlets.

Leaves digitately compound.....*Vitex.*

Leaves simple.

Leaves entire.

Flowers in long simple racemes.

Plants climbing; flowers blue, rarely white; leaves rough; fruit dry.....*Petrea.*

Plants not climbing; flowers whitish; leaves glabrous; fruit fleshy.....*Citharexylum.*

Flowers not in racemes.

Leaves whitish beneath; flowers in panicled spikes.*Avicennia.*

Leaves green; flowers not in panicled spikes.

Nutlets of the fruit united; flowers in open axillary cymes. *Clerodendron.*

Nutlets distinct; flowers in terminal panicles or in dense, axillary or lateral clusters.....*Aegiphila.*

Leaves toothed.

Flowers in heads, spikes, or racemes.

Spikes or heads very dense, short, the flowers crowded together.

Fruit a juicy drupe; shrubs.....*Lantana.*

Fruit dry; herbs, shrubs, or trees.....*Lippia.*

Spikes or racemes much elongate, the flowers remote.

Flowers sunken in pits in the rachis of the spike. *Stachytarpheta.*

Flowers not sunken in the rachis.

Calyx tubular; flowers sessile.....*Bouchea.*

Calyx not tubular; flowers pediceled.

Calyx enlarged and enclosing the unarmed fruit.*Priva.*

Calyx shorter than the spine-armed fruit....*Tamonea.*

Flowers in cymes or panicles.

Flowers in terminal panicles.....*Cornutia.*

Flowers in axillary cymes.....*Callicarpa.*

AEGIPHILA Jacq.

Shrubs or small trees; leaves entire; corolla with a spreading limb; stamens exserted; fruit a fleshy drupe.

Flowers in terminal panicles; leaves rounded or obtuse at the base. *A. elata.*

Flowers axillary or lateral; leaves acute to attenuate at the base.

Flowers axillary, in stalked few-flowered cymes.....*A. pauciflora.*

Flowers densely clustered on the old leafless branches. *A. monstrosa.*

Aegiphila elata Swartz. Stann Creek region, in thickets; ranging to Honduras and the West Indies. A shrub or small tree,

sometimes 6 meters high, the branches often long and trailing; leaves on very short petioles, oblong to broadly elliptic, glabrous or nearly so; flowers pale yellow; fruit globose, deep yellow, 1 cm. long.

Aegiphila monstrosa Moldenke. *Hulub* (Maya). *Vara Blanca* (Honduras). Honey Camp, Hillbank, El Cayo; ranging to Honduras. A shrub or small tree with brittle pale 4-angled branches; leaves very large and thin, long-stalked, almost glabrous; flowers pure white, small; fruits globose, forming very dense clusters.

Aegiphila pauciflora Standl. Trop. Woods 16: 41. 1928. Type from Vaca, western Cayo District, *Duncan Stevenson* 5 (Yale 11987). Leaves small, thick, long-petiolate, acuminate, glabrate.

AVICENNIA L.

Avicennia nitida Jacq. *Black Mangrove. Mangle Negro.* Frequent about mangrove swamps; widely distributed in tropical America. A shrub or rather small tree; leaves petioled, oblong, obtuse, entire, thick, whitish and puberulent beneath; flowers small, white, in dense panicled spikes. Heartwood dark brown, oily; very hard, heavy, tough, of medium texture and interlocked grain, laminated, durable, but tending to split apart at phloem layers in wood; little used. (See *T. of T. A.*, pp. 527–528.)

BOUCHEA Cham.

Bouchea prismatica (L.) Kuntze. Corozal-Orange Walk Road, *Gentle* 4856.

CALLICARPA L.

Callicarpa acuminata HBK. *Pukin* (Yucatan, Maya). Occasional in thickets; Mexico to Panama. A shrub or small tree, the pubescence of fine stellate hairs; leaves short-stalked, oblong-elliptic, acuminate, coarsely toothed; flowers small, white, in axillary cymes; fruit fleshy, black, 5 mm. in diameter.

CITHAREXYLUM L.

Shrubs or small trees; leaves entire or nearly so, thick; flowers small, white, in long, slender, often drooping racemes; fruit a fleshy drupe.

Stems round in cross section.....*C. caudatum.*

Stems 4–6-angled in cross section.

Stems 6-angled.....*C. hexangulare.*

Stems 4-angled.

Leaves narrowly oblong, narrowed to each end....*C. hirtellum.*

Leaves oblong-lanceolate, broadest near the base.
C. Donnell-Smithii.

Citharexylum caudatum L. *Bird-seed, Pigeon-feed.* Frequent in thickets; Central America and West Indies. A glabrous shrub or tree 1.5–9 meters high; leaves narrowly oblong, obtuse; flowers 5 mm. long; fruit 6 mm. in diameter, black and shining.

Citharexylum Donnell-Smithii Greenm. Camp 31, Guatemalan boundary, *Schipp* S627; Guatemala to Costa Rica. Reported by Schipp as a tree of 18 meters, with trunk diameter of 60 cm., but usually much smaller; stems glabrous; leaves large, long-tapering; flowers mauve; fruit yellow.

Citharexylum hexangulare Greenm. *Sac-xitch-che* (Maya). Xiabe; Río Grande; Guatemala and southern Mexico. A tree 7 meters high or less, the trunk 5–10 cm. in diameter; leaves lanceolate to oblong-elliptic, acuminate, acute at the base; flowers white.

Citharexylum hirtellum Standl. Field Mus. Bot. 4: 257. 1929. Type from Tower Hill, *Karling* 9; Maskall; Freshwater Creek; Honduras. A shrub; leaves elliptic-oblong, obtuse or acute, minutely rough-pubescent.

CLERODENDRON L.

Clerodendron ligustrinum (Jacq.) Roem. & Schult. *Itzimte* (Yucatan, Maya). Corozal District, *Gentle* 394; Mexico and Central America. A shrub or small tree; petiole bases thickened and persistent; leaves ovate to oblong, entire, glabrous or nearly so, punctate beneath; flowers in small axillary cymes; corolla white, with slender tube.

CORNUTIA L.

Shrubs or small trees with brittle 4-angled branches, copiously pubescent; leaves entire or toothed; flowers small, in large or small, terminal panicles; corolla tube straight or curved, the limb 4-lobed; perfect stamens 2; fruit a small globose drupe.

Corolla minutely glandular-puberulent, the tube 2 mm. thick or less.....*C. pyramidata.*

Corolla short-villous, the tube 3 mm. thick.....*C. grandifolia.*

Cornutia grandifolia (Schlecht. & Cham.) Schauer. *Cucaracho* (Honduras). *Latche* (Petén, Maya). Occasional in thickets; southern Mexico and Central America. A shrub or small tree, sometimes 5 meters high; leaves large, ovate or elliptic, long-acuminate, entire or

nearly so, densely soft-hairy; flowers violet, 1.5 cm. long, in large panicles. Wood brownish, fairly heavy and hard, coarse-textured, with harsh feel, not durable; rays very distinct; not utilized.

Cornutia pyramidata L. *Tzultesnuk* (Maya). Occasional in thickets; Yucatan, Central America, West Indies. A shrub or tree, sometimes 10 meters high, with a trunk 20 cm. in diameter; leaves minutely and closely pubescent. Both these species are handsome plants when loaded with their brightly colored flowers.

LANTANA L. Lantana

Shrubs with 4-angled branches; leaves petioled, toothed; flowers small, brightly colored, in long or short and head-like, axillary spikes; fruits small and juicy.

Stems armed with prickles; bracts of the spikes linear or lanceolate. *L. Camara.*

Stems unarmed; bracts mostly ovate.

Leaves chiefly in whorls of 3, acuminate.....*L. trifolia.*

Leaves opposite, commonly obtuse.....*L. involucrata.*

Lantana Camara L. *Cinco negritos* (Central America generally). *Petekin* (Yucatan, Maya). Common in thickets; widely distributed in tropical America. A coarse hairy shrub; leaves opposite, ovate; spikes short and head-like, long-stalked; corolla usually yellow at first but soon turning red; fruit of 4 black juicy drupes, suggesting a small blackberry. One of the most common weedy shrubs of Central America; often cultivated for ornament in temperate regions. The flowers exhibit great variation in their coloring, those of some plants being permanently yellow, and of others red from the first.

Lantana involucrata L. *Sage. Zacilhaxiu* (Yucatan, Maya). Occasional in thickets; widely distributed in tropical America. A stiff shrub about a meter high; leaves ovate to oblong, crenate, puberulent or tomentose beneath; flowers lilac or white, in stalked head-like spikes; fruit blue.

Lantana trifolia L. *Juanilama* (Honduras). Occasional in thickets; widely distributed in tropical America. A shrub a meter high; leaves oblong-lanceolate, rough; flower spikes elongated, the corollas purple; fruit purple.

LIPPIA L.

Herbs, shrubs, or small trees; leaves opposite or ternate, toothed or rarely entire; flowers small, in heads or spikes, bracted; calyx 2–4-toothed; stamens 4; fruit dry, 2-celled, included in the calyx.

Erect shrubs or trees.

Flower heads 4 or more at each node, on long slender stalks. *L. myriocephala.*

Flower heads 1–2 at each node, on short stalks..... *L. alba.*

Herbs, usually procumbent or prostrate.

Leaves oblong-linear; stems densely and coarsely strigose. *L. stoechadifolia.*

Leaves obovate-oblong to rhombic-ovate; stems not conspicuously strigose.

Leaves oblanceolate to obovate-oblong, broadest above the middle..... *L. nodiflora.*

Leaves rhombic-ovate, broadest at or below the middle.

Leaves very obtuse, with spreading acute teeth.... *L. reptans.*

Leaves mostly acute or acuminate, with appressed obtuse teeth..... *L. dulcis.*

Lippia alba (Mill.) N. E. Brown. All Pines, secondary forest; Mexico to northern South America. A slender erect shrub, usually a meter high or less; leaves lanceolate or ovate-oblong, crenate, scabrous, mostly acute; flower heads little longer than the petioles, globose or in fruit cylindric; corolla pale purple. The plant is strongly aromatic, and is much used in tropical America for medicinal purposes, being frequently grown in gardens for the purpose.

Lippia dulcis Trev. *Orozuz* (Yucatan). *Xtuhuexiu* (Yucatan, Maya). El Cayo, *Bartlett.* Plants normally herbaceous but often somewhat woody.

Lippia myriocephala Schlecht. & Cham. *Tatascamite* (Guatemala). El Cayo, *Bartlett* 13008; Mexico to Salvador. A tree, the trunk sometimes 15 cm. in diameter; leaves lanceolate or lance-oblong, long-acuminate, entire or serrate; flowers lilac, the heads globose or often cylindric, 5–7 mm. thick.

Lippia nodiflora (L.) Michx.

Lippia reptans HBK. Honey Camp.

Lippia stoechadifolia (L.) HBK. *Té cimarrón* (Petén). Tower Hill Estate, *Karling* 26.

PETREA L. Purple-wreath

Petrea arborea HBK. *Bejuco de Caballo* (Yucatan). *Opptzimin* (Yucatan, Maya). Occasional in thickets; Mexico to South America. A large woody vine; leaves short-stalked, elliptic-oblong to obovate,

obtuse or acute, entire, rough; flowers blue, in long drooping racemes; corolla small, the calyx lobes 1.5–2 cm. long. One of the handsomest of all Central American plants, because of its abundance of blue flowers, the color depending chiefly on the calyx lobes, which retain their color for a long time. A form with white flowers (f. *albiflora* Standl.) has been found on the Sittee River by Schipp, No. 727.

PRIVA Adans.

Priva lappulacea (L.) Pers. *Mozotillo* (Honduras).

STACHYTARPHETA Vahl

Stachytarpheta angustifolia (Mill.) Vahl. Honey Camp; New Town; Yucatan; Cuba.

Stachytarpheta cayennensis (L. Rich.) Vahl. *Wanche, Camak olal* (Maya). *San Diego, Verbena* (Petén). Plants herbaceous, or often somewhat shrubby and as much as a meter high; flowers blue or purple, in long slender spikes. A decoction of the plant is used in the South Cayo District as a remedy for dysentery.

Stachytarpheta jamaicensis (L.) Vahl. *Verbena* (Yucatan). *Ibinxiu* (Yucatan, Maya).

Stachytarpheta miniata Moldenke, Phytologia 1: 170. 1935. Type from Freshwater Creek Reserve, *R. S. Pelly* 14.

TAMONEA Aubl.

Tamonea curassavica (L.) Pers. *Chanxnuk* (Yucatan, Maya). Plants commonly herbaceous, but sometimes becoming slightly woody. Known in Central America only from this region.

VITEX L.

Trees; leaves opposite, digitately compound, the leaflets entire; flowers in axillary cymes or terminal panicles; calyx bell-shaped, 5-toothed; corolla with a short tube and somewhat 2-lipped limb; fruit a small or large drupe. Wood yellowish or brownish, moderately hard and heavy, strong, medium-textured, fairly straight-grained, easy to work, holds its place well when manufactured, is rather durable; used locally for cattle yokes; is suitable for carpentry and general construction.

Leaflets pale beneath and densely tomentose.....*V. Gaumeri.*

Leaflets green beneath, glabrous or nearly so.....*V. Kuylenii.*

Vitex Gaumeri Greenm. *Blue Blossom, Fiddlewood, Monkey Fiddle. Yaxnik* (Maya). Frequent in forest; Yucatan. A tree 15–18

meters high, the trunk 20–60 cm. in diameter; leaflets 5–7, long-stalked, acute or obtuse; flowers small, blue, in large or small panicles; fruit yellow, 1.5 cm. in diameter. A handsome and showy tree when in flower. The specimens placed here are somewhat variable, but probably represent a single species.

Vitex Kuylenii Standl. *Fiddlewood.* Forest Home and elsewhere, growing on stream banks; Guatemala. A tree 12 meters high, the trunk 25 cm. in diameter; leaflets slender-stalked, leathery, lance-oblong, acuminate; flowers pale blue; fruit yellow.

LABIATAE. Mint Family

COLEUS Lour. Coleus

Coleus Blumei Benth. *Manto de la Reina* (Honduras). Cultivated for its ornamental foliage, and perhaps becoming naturalized; native of tropical Asia.

HYPTIS Jacq.

Hyptis americana (Aubl.) Urban.

Hyptis brevipes Poit.

Hyptis capitata Jacq.

Hyptis lantanifolia Poit.

Hyptis pectinata (L.) Poit. *Xoltexnuc* (Yucatan, Maya).

Hyptis suaveolens (L.) Poit. *Orégano.*

Hyptis savannarum Briq.

Hyptis verticillata Jacq. *John Charles Weed. Verbena* (Honduras). Frequent in thickets; widely distributed in tropical America. A slender shrub 1–1.5 meters high, almost glabrous; leaves small, lanceolate, sharply toothed; flowers very small, white, in long interrupted spike-like racemes. According to Schipp, the crushed leaves are placed by the Caribs in hens' nests to drive away vermin. Throughout Central America the plant is a favorite domestic remedy for innumerable ailments. In the Canal Zone, where the West Indians give it the same name that is employed in British Honduras, the plant is so popular a remedy that it formerly was sold for medicinal purposes in the government commissaries.

LEONURUS L.

Leonurus sibiricus L. Corozal District; introduced from the Old World.

MARSYPIANTHES Mart.

Marsypianthes Chamaedrys (Vahl) Kuntze. Honey Camp.

OCIMUM L. Basil

Ocimum micranthum Willd. *Barsley, Baisley. Albahaca* (Central America). *Cacaltun* (Yucatan, Maya).

SALVIA L.

Salvia micrantha Vahl. Reported by Lundell from the northern part of the Colony.

Salvia miniata Fernald. Collected by Schipp.

Salvia obscura Benth. Stann Creek.

SCUTELLARIA L.

Scutellaria chalicophila Loes. Esperanza Road, *Schipp* S723.

Scutellaria longifolia Benth. Camp 36, Guatemalan boundary, *Schipp* S712.

TEUCRIUM L.

Teucrium inflatum Swartz.

SOLANACEAE. Potato Family

Herbs, shrubs, or trees, often armed with prickles, the pubescence frequently of branched hairs; leaves alternate or sometimes opposite, without stipules, simple or compound; flowers perfect, small or large and showy, variously arranged, regular or nearly so; corolla of united petals; stamens normally 5, inserted on the corolla tube; fruit a berry or a capsule. Woods light-colored, soft to moderately hard, fine-textured, not durable; not utilized.

Fruit a capsule. Plants herbaceous.

Capsule not spiny.

Fertile stamens 5; tall herbs with broad leaves..... *Nicotiana.*

Fertile stamens 2 or 4; small herbs with narrow leaves. *Schwenkia.*

Capsule covered with stout spines..... *Datura.*

Fruit a berry.

Calyx becoming much enlarged and inflated, enclosing the berry. Herbs..... *Physalis.*

Calyx not inflated.

Corolla tubular or tubular-funnelform.

Corolla about 5 cm. long; epiphytic shrubs. . *Merinthopodium.*

Corolla less than 3 cm. long; plants not epiphytic. . . . *Cestrum.*

Corolla bell-shaped or saucer-shaped.

Leaves pinnately parted to the midrib. Herbs. . . *Lycopersicon.*

Leaves entire or lobed, not parted to the midrib.

Anthers free, dehiscent by longitudinal slits. Calyx truncate. . . . . *Capsicum.*

Anthers connivent.

Connective of the anther thickened dorsally; leaves dimorphous, the lower ones deeply pinnate-lobed, the upper entire. Unarmed shrubs. . . *Cyphomandra.*

Connective of the anther not thickened; leaves not as described above.

Calyx lobed. . . . . *Solanum.*

Calyx truncate but usually with 10 appendages on the outer surface. Plants unarmed. . . . . *Lycianthes.*

CAPSICUM L. Red Pepper

Capsicum annuum L. *Red Pepper. Chile. Ají. Ic* (Maya). Cultivated in numerous varieties.

Capsicum escuintlense (Coult.) Standl. Stann Creek Valley. A large coarse herb, or sometimes somewhat shrubby.

Capsicum frutescens L. *Chile. Maaxic* (Yucatan, Maya). A wild form of the red pepper, with exceedingly pungent fruits; cultivated and also wild, the plants herbaceous or often shrubby.

Capsicum frutescens L. var. **baccatum** (L.) Irish.

CESTRUM L.

Shrubs or small trees; leaves petiolate, large or small, entire; flowers clustered in the leaf axils or in small cymes; corolla white or greenish, tubular; fruit a small berry.

Leaves acute to long-attenuate at the base. . . . . *C. macrophyllum.*

Leaves rounded or very obtuse at the base.

Flowers 15 mm. long. . . . . *C. panamense.*

Flowers 20–25 mm. long. . . . . *C. nocturnum.*

Cestrum macrophyllum Vent. Middlesex, in forest; widely distributed in tropical America. A shrub 3 meters high or less;

leaves large, elliptic-oblong; flowers greenish white, often clustered on old naked branches; berries white or purple.

Cestrum nocturnum L. *Night Bloom. Sopillo. Puta de Noche. Huele de noche* (Central America). *Akabyom* (Yucatan, Maya). Frequent in thickets; widely distributed in tropical America. A slender glabrous shrub or small tree; leaves elliptic to oblong, acute; flowers pale green; berries white. The flowers are strongly fragrant, especially at night.

Cestrum panamense Standl. *Dama de Noche.* Thickets or forest; ranging to Panama. A nearly glabrous shrub or small tree, 9 meters high or less, the trunk as much as 30 cm. in diameter; leaves thin, lance-oblong, long-acuminate; flowers pale green; berries white.

CYPHOMANDRA Sendtn.

Cyphomandra mollicella Standl. Occasional in thickets; southward to Panama. A tree-like shrub 2–3 meters high, or only herbaceous; leaves dimorphous, large, the lower ones pinnately lobed, the upper broadly ovate and entire, finely pubescent beneath or almost glabrous; flowers green, in few-flowered one-sided racemes, these recurved and elongating in age; fruit a large berry.

DATURA L.

The large-flowered shrubby angel-trumpet, *D. candida* (Pers.) Pasq., doubtless is planted for ornament.

Datura Stramonium L.

LYCIANTHES Hassler

Unarmed shrubs or herbs, often climbing; leaves frequently very unequal; calyx truncate, often furnished with 5–10 short or long, filiform appendages; fruit a small berry.

Leaves densely covered beneath with a minute, very close, stellate, whitish tomentum ..... *L. hypoleuca.*

Leaves green beneath, the pubescence, if any, sparse and coarse.

Calyx truncate, without appendages.

Leaves very unequal, lustrous, the smaller ones rounded at the apex ..... *L. nitida.*

Leaves almost equal in size, all of them acute or acuminate. *L. synanthera.*

Calyx with conspicuous linear appendages.

Leaves obtuse or rounded at the apex; calyx glabrate.
L. variifolia.

Leaves acute or acuminate; calyx densely stellate-tomentose or hirsute.

Calyx stellate-tomentose.....*L. sideroxyloides.*

Calyx densely covered with long brown slender hairs.
L. vulpina.

Lycianthes hypoleuca Standl. Trop. Woods 9: 12. 1927. Type from Orange Walk District, *Winzerling* V.14. A slender vine; leaves bright green above, glabrate; calyx truncate; fruit red, globose, 7–8 mm. in diameter.

Lycianthes nitida Bitter. Stann Creek Valley, along mountain stream, *Schipp* S303; Guatemala and Honduras. A glabrous shrub 1–1.5 meters high; larger leaves oblong or elliptic-oblong, acute to attenuate at the base, the smaller ones rounded and several times shorter; corolla pale purplish green; berries red. The shrub is sometimes epiphytic and sometimes terrestrial.

Lycianthes sideroxyloides (Schlecht.) Bitter. Frequent in thickets; southern Mexico. A small or large woody vine; leaves ovate or elliptic, sparsely or more often densely stellate-pubescent; flowers small, white, clustered in the leaf axils, on short or long pedicels.

Lycianthes synanthera (Sendtn.) Bitter. Honey Camp; Central America. A slender shrub, glabrous or nearly so; leaves slender-petiolate, elliptic to oblong; flowers solitary or in pairs in the leaf axils, on long pedicels; berries 1 cm. in diameter.

Lycianthes variifolia Standl. Field Mus. Bot. 4: 259. 1929. Frequent in thickets; type from Tower Hill, *Karling* 13. A small or large vine; leaves ovate to rounded, thin, sparsely or rather densely stellate-pubescent, entire, slender-petiolate; flowers solitary or in pairs.

Lycianthes vulpina Standl. Dolores, in forest, *Schipp* S499; Honduras. A large slender vine, densely covered with long brown branched hairs; leaves asymmetric, oblong to ovate, abruptly acuminate; flowers white.

LYCOPERSICON Mill.

Lycopersicon esculentum Mill. *Tomato. Tomate. Ppac* (Maya). Cultivated and also wild, but not native, probably, in this region.

MERINTHOPODIUM Donn. Smith

Merinthopodium neuranthum (Hemsl.) Donn. Smith. *M. leptesthemum* Blake, Contr. Gray Herb. 52: 86. 1917. Fair View, an epiphyte in forest, *Schipp* S389; type of *M. leptesthemum* from Toledo, epiphytic on a palm, *Peck* 508; southward to Costa Rica. A small epiphytic shrub; leaves alternate, oblong to obovate, entire, glabrous, acuminate; flowers few, at the apex of a short branch, long-pediceled; corolla green, 5 cm. long. It may be that *M. leptesthemum* is a distinct species, but the Schipp collection appears to be no different from material collected in other parts of Central America.

NICOTIANA L.

Nicotiana Tabacum L. *Tobacco. Tabaco. Kutz* (Maya). Cultivated and sometimes escaping.

PHYSALIS L. Ground-cherry

Physalis angulata L.

Physalis ixocarpa Brot.

Physalis Lagascae Roem. & Schult. *Pacunilek* (Yucatan, Maya).

Physalis pubescens L. *Farolito* (Yucatan). *Paccanil* (Yucatan, Maya).

SCHWENKIA L.

Schwenkia americana L. All Pines, *Schipp* 686.

Schwenkia angustifolia Benth. Reported as collected by Peck.

Schwenkia hirta Klotzsch. Reported as collected by Peck.

Schwenkia oxycarpa Robinson, Proc. Amer. Acad. 45: 40. 1910. Type from open damp ground near Sibun River, *Peck* 417a.

SOLANUM L.

Herbs, shrubs, or small trees, often armed with prickles, the pubescence frequently of branched hairs; leaves mostly simple but often deeply lobed; flowers variously arranged, the corolla saucer-shaped and 5-lobed; fruit a small or large berry.

Anthers elliptic or cylindric, obtuse, the pores usually anterior; plants unarmed.

Pubescence none or of simple hairs.

Leaves composed of 3 leaflets.....*S. phaseoloides.*

Leaves simple.
Flowers in sessile umbels.....*S. Peckii.*
Flowers in stalked umbels or cymes.
Plants herbaceous; leaves pubescent.....*S. nigrum.*
Plants woody; leaves glabrous or nearly so.
Flowers in umbels.....*S. nudum.*
Flowers in many-flowered cymes.....*S. Schippii.*
Pubescence of branched hairs.
Leaves sessile or nearly so.....*S. salviifolium.*
Leaves conspicuously petiolate.
Flowers in short-stalked umbels.
Calyx lobed almost to the base.....*S. Lundellii.*
Calyx very shallowly lobate.....*S. limitaneum.*
Flowers in long-stalked many-flowered cymes.
Ovary glabrous.....*S. bicolor.*
Ovary and fruit pubescent.
Leaves oblong-oblanceolate, mostly 6 cm. wide or less, long-attenuate to the base.....*S. asperum.*
Leaves chiefly ovate and much broader, rounded to acute at the base.....*S. verbascifolium.*
Anthers elongate, attenuate to the apex, the pores posterior or terminal; plants normally armed with prickles.
Plants climbing shrubs, the prickles short and recurved.
Bristles of the stem with a tuft of hairs at the apex.
S. Donnell-Smithii.
Bristles without hairs at the apex.
Branches densely stellate-pubescent.....*S. lanceifolium.*
Branches glabrous or nearly so.
Leaves petioled, not cuneate at the base.....*S. Houstoni.*
Leaves almost sessile, cuneate at the base..*S. jamaicense.*
Plants not climbing; prickles not recurved.
Branches glabrous or nearly so. Plants herbaceous.
S. aculeatissimum.
Branches densely stellate-pubescent.
Plants herbaceous.
Leaves shallowly lobed; fruiting peduncles recurved.
S. guanicense.

Leaves deeply bipinnatifid; fruiting peduncles erect. *S. cornutum.*

Plants shrubs; leaves entire or shallowly lobed.

Fruit densely pilose with very long, soft hairs. . *S. hirtum.*

Fruit glabrous.

Leaves coarsely and densely white-woolly beneath. *S. Hartwegii.*

Leaves rather closely stellate-tomentose with tawny or brownish hairs. . . . . *S. diversifolium.*

Solanum aculeatissimum Jacq. El Cayo.

Solanum asperum Rich. Frequent in thickets; widely distributed in tropical America. A shrub or small tree, reported (perhaps incorrectly) as sometimes 7.5 meters high; leaves very rough, entire, long-acuminate; flowers white.

Solanum bicolor Willd. Corozal District; widely distributed in tropical America. A large shrub; leaves entire or nearly so.

Solanum cornutum Lam. *Ixpahalcan* (Yucatan, Maya). Reported as collected by Peck; Mexico and northern Central America. A coarse weedy herb, armed throughout with long yellow prickles, more or less hairy with long branched hairs; flowers large, yellow, in few-flowered cymes; berry enclosed in the large prickly calyx.

Solanum diversifolium Schlecht. *Friega-plato* (Honduras). Occasional in thickets; Mexico and Central America. A prickly shrub 1–2 meters high; leaves broad, angled and shallowly lobed; flowers white; berries yellow, 1 cm. in diameter. The large flannel-like leaves of this and some other species are employed for cleaning dirty dishes, hence the Spanish name cited.

Solanum Donnell-Smithii Coult. *Huevo de Gato* (Honduras). Collected by Peck; Mexico to Costa Rica. A large woody vine; leaves oblong to elliptic, usually lobed, prickly beneath; fruit large, orange.

Solanum guanicense Urban. Malfredi Lagoon, *Schipp* 1175.

Solanum Hartwegii Benth. Honey Camp; Mexico and Central America. A shrub, the branches often unarmed; leaves green above, with wavy or shallowly lobed margins, often somewhat cordate at the base; flowers blue or violet.

Solanum hirtum Vahl. *Shumpa. Putbalam* (Yucatan, Maya). Corozal District; widely distributed in tropical America. An herb

or shrub about a meter high, densely armed with long straight prickles; leaves angled and shallowly lobed, densely tomentose beneath; fruit orange-colored, 2 cm. in diameter.

Solanum jamaicense Mill. Belize-Sibun Road, *Gentle* 21; widely distributed in tropical America. A densely prickly shrub, often with elongate branches; leaves very densely stellate-pubescent, elliptic or rhombic, angled or shallowly lobed; flowers small, white; berries orange-red.

Solanum Houstoni Dunal. *Sosumbra.* Stann Creek Valley; Belize District; Mexico to Salvador; Cuba. A large vine, armed on all parts with short recurved prickles; leaves irregularly lobed, small and narrow; flowers white, in small umbels or racemes; berries small, red.

Solanum lanceifolium Jacq. Stann Creek Valley, in swampy thickets; widely distributed in tropical America. A small or large, woody vine, similar to the preceding; leaves densely stellate-pubescent beneath; corolla white; berries red.

Solanum limitaneum Standl. Carnegie Inst. Wash. Publ. 461: 85. 1935. Type collected in forest, Camp 33, Guatemalan boundary, *Schipp* S681. A scandent unarmed shrub 10 meters long, the stout branches covered with a dense brown stellate tomentum; leaves oblong-ovate, entire, acuminate, rounded at the base; fruit glabrous, 1.5 cm. in diameter.

Solanum Lundellii Standl. Field Mus. Bot. 8: 42. 1930. Type from Roaring Creek, *Lundell* 324; Chiapas. Apparently a woody vine, densely stellate-pubescent; leaves short-petioled, ovate-oblong, acuminate, entire, very unequal at the base.

Solanum nigrum L. *Bocano. Yerbamora* (Yucatan). *Pahalcan* (Yucatan, Maya). Usually known as Black Nightshade. In some parts of Central America the young shoots are cooked and eaten as a vegetable.

Solanum nudum HBK. *Yerba de barrer.* Frequent in thickets; Mexico and Central America. An almost glabrous shrub 1–2 meters high; reported from British Honduras, but probably in error, as a tree of 9 meters; leaves elliptic to oblong or ovate, acute, entire; flowers small, greenish white, in short-stalked lateral umbels; berries small, black. The crushed leaves have an offensive odor.

Solanum Peckii Blake, Contr. Gray Herb. 52: 87. 1917. Type from Monkey River, *Peck* 585.

Solanum phaseoloides Polak. Esperanza Road, *Schipp* S727.

Solanum salviifolium Lam. Big Creek, *Schipp* 172; widely distributed in tropical America. A slender shrub; leaves oblong-ovate, entire, acute or acuminate, green above, very white beneath; flowers small, white.

Solanum Schippii Standl. Type from Machaca, open forest, *Schipp* S584. An unarmed shrub a meter high, glabrous; leaves alternate, unequal, obovate or obovate-elliptic, acute, entire; flowers white, secund.

Solanum verbascifolium L. *Friega-plato* (Honduras). *Tompaap* (Yucatan, Maya). Honey Camp; widely distributed in tropical America. A shrub or small tree 2–4 meters high; leaves entire, acuminate, very soft and flannel-like, densely stellate-pubescent; flowers white; fruit yellow, globose, 6–10 mm. in diameter.

SCROPHULARIACEAE. Figwort Family

Unless otherwise indicated, local plants of this family are herbs.

ALECTRA Thunb.

Alectra melampyroides (Rich.) Kuntze. Toledo, open pasture, *Schipp* 1082.

ANGELONIA Humb. & Bonpl.

Angelonia ciliaris Robinson, Proc. Amer. Acad. 45: 400. 1910. Type collected near Sibun River, *Peck* 417; numerous collections have been received recently. An herb, 60 cm. high or less, flowers described as blue or lavender.

BACOPA Aubl.

Bacopa lacertosa Standl. Field Mus. Bot. 11: 140. 1932. Type from All Pines, in swamp, *Schipp* 763. Hillbank, *Pelly* 52; Northern River, *Gentle* 915.

Bacopa Monnieri (L.) Wettst.

Bacopa naias Standl. Field Mus. Bot. 11: 141. 1932. Type from All Pines, in swampy places, *Schipp* 610.

Bacopa procumbens (Mill.) Greenm.

Bacopa rotundifolia (Michx.) Wettst.

BUCHNERA L.

Buchnera pusilla HBK.

CAPRARIA L.

Capraria biflora L. *Claudiosa* (Yucatan). *Pasmoxiu* (Petén).

DERMATOCALYX Oerst.

Dermatocalyx parviflorus Oerst. *Tietie.* Toledo District; Sittee River; Guatemala to Panama. A large glabrous woody vine, the stems as much as 5 cm. thick; leaves opposite, petioled, leathery, elliptic to obovate, short-pointed; flowers densely clustered in the leaf axils. The specific determination is questionable, since the local specimens do not agree too well with those collected farther south, but the available material is not complete enough to determine whether a distinct species is involved.

GERARDIA L.

Gerardia albida (Britt. & Penn.) Standl., comb. nov. *Agalinis albida* Britt. & Penn. All Pines, *Schipp* 614. A West Indian species, unknown elsewhere on the continent.

Gerardia maritima Raf. var. **grandiflora** Benth. All Pines, *Schipp* 591; Honey Camp, *Lundell* 587. The genus is unknown elsewhere in Central America.

ILYSANTHES Raf.

Ilysanthes rotundifolia Benth. All Pines.

RUSSELIA Jacq.

Russelia campechiana Standl. Apparently frequent in the northern part of the Colony; a species known only from the Yucatan Peninsula.

Russelia polyedra Zucc. Seine Bight, along beach, *Schipp* 671.

Russelia sarmentosa Jacq. Honey Camp region.

Russelia verticillata HBK. Honey Camp.

SCOPARIA L.

Scoparia dulcis L. *Anise-seed Bush. Escobilla* (Honduras).

STEMODIA L.

Stemodia maritima L.

Stemodia parviflora Ait.

Stemodia pusilla Benth.

TORENIA L.

Torenia crustacea (L.) Cham. & Schlecht. Honey Camp, *Lundell.*

VANDELLIA L.

Vandellia diffusa L. Big Creek, *Schipp.*

BIGNONIACEAE. Bignonia Family

Trees or woody vines; leaves alternate or opposite, simple or compound, the terminal leaflet often replaced by a tendril; flowers large and showy; corolla of united petals, usually funnelform, the calyx inferior and of united sepals; stamens 4, inserted on the corolla tube alternate with the lobes, a fifth sterile stamen usually present; fruit capsular or baccate, usually very large.

Plants erect; leaves never with tendrils.

Leaves simple; fruit gourd-like.

Leaves fascicled, narrowly oblanceolate; seeds compressed, thin; flowers borne mostly on the trunk and large branches. *Crescentia.*

Leaves alternate, mostly oblong or oblanceolate; seeds thick; flowers chiefly in the leaf axils..... *Enallagma.*

Leaves compound; fruit not gourd-like.

Leaves bipinnate; flowers blue; fruit almost as broad as long. *Jacaranda.*

Leaves digitately compound; flowers not blue; fruit elongate.

Leaflets 3; petiole winged..... *Parmentiera.*

Leaflets 5; petiole not winged..... *Tabebuia.*

Plants woody vines; leaves often with tendrils.

Tendrils compressed at the apex, terminating in sharp-pointed hooks. Flowers yellow.

Calyx truncate..... *Bignonia.*

Calyx deeply cleft on one side, spathe-like..... *Macfadyena.*

Tendrils without sharp hooks at the apex.

Calyx apparently double, with 2–3 interior lobe-like appendages.

Flowers purple or pink; leaflets minutely scaly beneath. *Amphilophium.*

Calyx simple, not appendaged.

Calyx deeply cleft on one side or else 2-lipped. Pods linear.

Calyx deeply cleft on one side; flowers 8 cm. long, yellow. *Callichlamys.*

Calyx 2-lipped; flowers less than 5 cm. long..... *Lundia.*

Calyx truncate or equally short-toothed.

Corolla deeply 2-lipped, 1.5 cm. long or less. . *Tynnanthus.*

Corolla not or only obscurely 2-lipped, usually much more than 1.5 cm. long.

Stipules conspicuous, broad and leaf-like or narrow and bristle-like; fruit almost as broad as long, or elongate and covered with flexible spines, or sometimes linear.

Fruit linear..... *Pleonotoma.*

Fruit oblong to oval or rounded.

Fruit covered with spines..... *Clytostoma.*

Fruit unarmed..... *Anemopaegma.*

Stipules small and inconspicuous; fruit linear or oblong, unarmed.

Calyx broad and spreading, more or less saucer-shaped; corolla tomentose on the lobes only. *Petastoma.*

Calyx campanulate or more or less tubular, not with a spreading limb; corolla glabrous outside or pubescent on the tube as well as on the lobes.

Tube of the corolla long and slender, little dilated upward, the corolla 7–8.5 cm. long. *Tanaecium.*

Tube of the corolla relatively short, conspicuously dilated upward, usually much shorter.

Disk none..... *Cydista.*

Disk present at the base of the ovary.

Calyx conspicuously glandular outside. *Adenocalymna.*

Calyx not glandular outside.

Leaflets stellate-tomentose on the upper surface when young, usually 3. . *Saldanhaea.*

Leaflets not stellate-tomentose on the upper surface, usually 2..... *Arrabidaea.*

ADENOCALYMNA Mart.

Woody vines, provided with tendrils; leaves usually with 2 leaflets; flowers large and showy, in chiefly axillary, few-flowered racemes; calyx campanulate or tubular-campanulate, usually bearing numerous glands outside; capsule compressed, oblong or linear.

Leaflets dotted beneath with numerous large glands..*A. punctifolium.*
Leaflets not glandular beneath.....*A. heterophyllum.*

Adenocalymna heterophyllum Standl. Collected by Gentle at Maskall and San Andrés; Yucatan. Leaflets 2 or 3, large, elliptic or broadly ovate, acute to rounded at the apex, glabrous or sparsely and minutely lepidote; calyx truncate, 6–7 mm. long; corolla 6–7.5 cm. long, densely tomentulose outside; capsule oblong-linear, 3 cm. wide.

Adenocalymna punctifolium Blake. *Zoh-bach* (Yucatan, Maya). Honey Camp, Middlesex; Yucatan and Guatemala. A large woody vine, the stems as much as 5 cm. in diameter; leaflets 2, oblong-ovate, acuminate, cordate at the base, short-hairy beneath and dotted with large glands; corolla creamy white, 4 cm. long, puberulent; calyx toothed, densely puberulent.

AMPHILOPHIUM Kunth

Small or large, woody vines; leaves with 2 or 3 leaflets, the terminal leaflet often replaced by a tendril; flowers large and showy, pink and white, in small terminal panicles; calyx campanulate, the limb broad and sinuate, bearing 2 or 3 lobe-like appendages within; corolla bilabiate; capsule oblong-elliptic, compressed but thick, smooth.

Leaflets finely stellate-pubescent beneath.....*A. molle.*
Leaflets merely lepidote beneath, or often barbate along the costa. *A. paniculatum.*

Amphilophium molle Schlecht. & Cham. San Joaquín, *Gentle* 812; Mexico and Central America. Closely related to the next species, and perhaps not specifically distinct from it.

Amphilophium paniculatum (L.) HBK. Occasional in thickets; widely distributed in tropical America. Usually a small vine; leaflets 2–3, rounded-ovate, short-acuminate, often cordate at the base, minutely lepidote beneath; flowers pinkish white, 3–4 cm. long; calyx bearing 2–3 lobe-like appendages within; capsule oblong-elliptic, smooth, 8–10 cm. long, 4 cm. wide.

ANEMOPAEGMA Mart.

Anemopaegma belizeanum Blake, Contr. Gray Herb. 52: 91. 1917. Type from the bank of Río Grande, *Peck* 957; San Andrés; Jacinto Creek. A woody vine; leaflets 2, oval or ovate-oblong, obtusely short-acuminate, rounded-cuneate at the base, impressed-

lepidote; racemes about 3-flowered, axillary; calyx subtruncate; corolla yellow, almost 6 cm. long, glabrous outside. The specific name was published as *"balizeanum."*

ARRABIDAEA DC.

Woody vines; leaflets 2–3, entire, the terminal one often replaced by a tendril; flowers large or small, in chiefly terminal panicles; calyx bell-shaped, truncate or with 5 small teeth; corolla funnelform-campanulate; capsule linear, obcompressed.

Leaflets pale beneath, covered with a very dense, minute tomentum. *A. Lundellii.*

Leaflets green beneath, glabrous or nearly so.

Calyx 2 cm. long..... *A. belizensis.*

Calyx 4–5 mm. long..... *A. floribunda.*

Arrabidaea belizensis Standl. Field Mus. Bot. 8: 48. 1930. Type from Middlesex, in forest, *Schipp* 284. A woody vine 9 meters long, the stems 7 cm. in diameter; leaflets broadly elliptic, abruptly short-acuminate, rounded at the base, glabrous above, tufted beneath in the axils of the nerves; corolla purple, sparsely puberulent, 5 cm. long. The generic position of this plant is uncertain.

Arrabidaea floribunda (HBK.) Loes. *Zacak* (Yucatan, Maya). All Pines, open forest, *Schipp;* southern Mexico. A small or large vine; leaflets 2–3, elliptic to broadly ovate, acute or obtuse, glabrous; corolla purple, almost 2 cm. long, densely puberulent; panicles large and many-flowered; capsules linear, about 20 cm. long. The foliage turns purple-red when dried.

Arrabidaea Lundellii Standl. Field Mus. Bot. 8: 48. 1930. *Tietie.* Type from Honey Camp, *Lundell* 56; Campeche. A large woody vine, climbing to the tops of tall trees; leaflets broadly ovate, obtuse to acuminate, green on the upper surface; calyx truncate; corolla 2.5 cm. long; stems sometimes 15 cm. in diameter.

BIGNONIA L.

Bignonia dasyonyx Blake, Contr. Gray Herb. 52: 93. 1917. Type from Toledo, in forest, *Peck* 919; Honey Camp(?). A large woody vine; tendrils ending in 3 sharp-pointed claw-like hooks; leaflets 2, ovate, acute, subcordate, soft-pilose; flowers pedicellate in the leaf axils, solitary or in 2's; calyx somewhat inflated, large, green; corolla yellow, 5.5 cm. long, glabrous.

CALLICHLAMYS Miq.

Callichlamys latifolia (A. Rich.) Schum. *Tabebuia speciosa* Standl. Field Mus. Bot. 8: 49. 1930. Middlesex, in forest, *Schipp* S51, type of *T. speciosa;* Panama to Brazil. A woody vine as much as 15 meters long, the trunk 7 cm. thick; leaflets usually 3, large, elliptic, thick, almost glabrous; flowers bright yellow, 8 cm. long, in short racemes; capsule oblong, woody, 15 cm. long and 6 cm. wide.

CLYTOSTOMA Miers

Small or large, woody vines; leaflets usually 2, broad or narrow, acuminate, glabrous or nearly so; flowers large and showy, in few-flowered, terminal or axillary clusters; calyx dentate, campanulate; capsule oval or oblong, woody, compressed, very densely covered with long flexible spines.

Leaflets narrowly lance-oblong; corolla 6–7.5 cm. long. . . *C. elegans.*

Leaflets elliptic or obovate-elliptic; corolla 5–5.5 cm. long. *C. mayanum.*

Clytostoma elegans Standl. Carnegie Inst. Wash. Publ. 461: 86. 1935. Type from river bank, Río Grande, *Schipp* 1127; Northern River, *Gentle* 1350. A vine 12 meters long; leaflets about 12 cm. long and 4 cm. wide; calyx 7–8 mm. long, glabrous or nearly so, the teeth subulate, 1.5–2 mm. long; corolla pink, sparsely villosulous outside; immature(?) fruit 3 cm. long.

Clytostoma mayanum Standl. Corozal District, high ridge, *Gentle* 441; Petén. Leaflets 7–10 cm. long, 3–5.5 cm. wide; calyx 5 mm. long, glabrous, minutely and remotely denticulate; corolla white, sparsely lepidote outside.

CRESCENTIA L.

Crescentia Cujete L. *Calabash, Wild Calabash. Jícara, Güiro. Luch, Huaz* (Maya). Planted and also wild in thickets or open forest; widely distributed in tropical America. A small tree with thick spreading branches; leaves clustered on short spurs, oblanceolate or spatulate, small; flowers green and brown-purple, 5–8 cm. long, borne on the trunk and larger branches. The fruits, which resemble gourds, vary greatly as to size and shape. They are sometimes oval and 15 cm. long, but frequently globose and 30 cm. in diameter or even larger. The shells of the fruits find a wide use everywhere that the tree grows, serving for cups, bottles, kitchen utensils, and numerous other purposes. Wood brownish, often veined with darker

color; moderately heavy, but tough and strong, rather coarse-textured, has a consistency suggesting Elm (*Ulmus*), is not durable; occasionally used locally for saddletrees and tool handles. (See *T. of T. A.*, pp. 544–545.)

CUSPIDARIA DC.

A South American genus, represented in North America by a single species.

Cuspidaria pterocarpa (Cham.) DC. Temash River, primary forest, *Schipp* S910; Petén and Brazil. A woody vine 18 meters long, the trunk 3.5 cm. in diameter; leaflets 3, ovate, acuminate, glabrous above, pubescent beneath or almost glabrous; calyx deeply dentate, 4–6 mm. long, pubescent; corolla pinkish, 3.5–4.5 cm. long, more or less tomentose outside; fruit linear, 15–35 cm. long, with broad wavy longitudinal wings. Easily recognizable by the form of the fruit.

CYDISTA Miers

Cydista aequinoctialis (L.) Miers. *Chacanicab* (Yucatan, Maya). Occasional in forest or thickets; widely distributed in tropical America; leaflets oblong to ovate, turning dark when dried, acute, glabrous or pubescent; corolla 5–8 cm. long, pink or pale purple, lepidote outside; pods linear, 25–40 cm. long.

ENALLAGMA Baill.

Glabrous trees or shrubs; leaves alternate, entire, leathery, short-stalked; flowers axillary, solitary, long-stalked; calyx closed in bud, becoming deeply 2-lobed; fruit large, gourd-like, indehiscent.

Calyx 3 cm. long; corolla 4–5 cm. long..... *E. latifolia.*

Calyx 1.5 cm. long; corolla 2.5–3 cm. long..... *E. Donnell-Smithii.*

Enallagma Donnell-Smithii (Sprague) Standl., comb. nov. *Crescentia Donnell-Smithii* Sprague. *Calabash.* Occasional in swamps or ravines; southward to Panama. A shrub or tree 4.5–9 meters high, the trunk 10 cm. in diameter; leaves oblong or oblanceolate-oblong, acute or acutish; flowers green.

Enallagma latifolia (Mill.) Small. *E. cucurbitina* Baill. *Wild Calabash. Morito de Río.* Occasional along streams; widely distributed in tropical America. A tree as much as 15 meters high, with trunk diameter of 30 cm., the bark smooth and gray; leaves stiff, usually rounded and short-pointed at the apex; flowers greenish; fruit globose, 8–10 cm. in diameter.

JACARANDA Juss.

Jacaranda Copaia (Aubl.) Don. Río Grande, in forest, *Schipp* 1133, 1152; ranging to Brazil. A tree of 25 meters, the trunk 75 cm. in diameter; leaves large, opposite, bipinnate, the leaflets numerous, small, acuminate, cuneate at the base, glabrate; flowers blue, 3–4 cm. long, in large panicles; fruit oval or rounded, compressed, woody, the seeds broadly winged. When in flower, this is one of the handsomest and most ornamental of American trees.

LUNDIA DC.

Lundia dicheilocalyx Blake, Contr. Gray Herb. 52: 94. 1917. Type from Toledo, in forests, *Peck* 495. A large woody vine; leaflets 2, ovate, abruptly short-acuminate, shallowly cordate at the base, puberulent beneath on the nerves, otherwise glabrous; panicles axillary and terminal, many-flowered; calyx bilabiate, 6 mm. long, puberulent; corolla 4.5 cm. long, densely short-pilose.

MACFADYENA A. DC.

Macfadyena uncinata (Meyer) A. DC. *Uña de Gato* (Honduras). Sittee River, *Schipp* S94; Central and South America. A large woody vine; tendrils bearing 3 sharp-pointed hooks; leaflets 2, oblong to lanceolate, acuminate, pubescent or glabrate; calyx large and somewhat inflated; corolla yellow, 6 cm. long; fruit a long linear capsule. Juvenile plants, which creep closely along tree trunks, are very different in appearance from adult ones.

PARAGONIA Bur.

Paragonia pyramidata (Rich.) Bur. *Tietie.* Occasional in forest and thickets; widely distributed in tropical America. Leaflets 2, oblong to elliptic, acute, appearing glabrous but with minute scales scattered over the lower surface; flowers 6–7.5 cm. long, rose-pink, in large terminal panicles; calyx bell-shaped, minutely pubescent, scarcely toothed; corolla short-hairy outside; capsules linear, 40 cm. long.

PARMENTIERA DC.

Parmentiera edulis DC. *Cow Okra. Cuajilote* (Campeche). *Kat* (Yucatan, Maya). Occasional; Mexico and northern Central America. A shrub or small tree, often armed with short spines; leaves long-stalked, the 3 leaflets elliptic to obovate, small or large, acute or obtuse, entire or toothed; flowers greenish white, on old

wood, 7 cm. long; fruit fleshy, 10–15 cm. long, 2 cm. thick or more. The fruit is eaten either raw or cooked.

It may be that the closely related *P. aculeata* (HBK.) Seem., with slender fruit 15–25 cm. long, also occurs in British Honduras.

PETASTOMA Miers

Woody vines; leaflets 2; flowers large, in ample terminal panicles; calyx broad and saucer-shaped; corolla tomentose outside on the lobes only; capsule long and linear, the seeds broadly winged.

Calyx truncate; leaflets minutely and sparsely lepidote. *P. patelliferum.*

Calyx with narrow elongate remote teeth; leaflets not lepidote. *P. caudiculatum.*

Petastoma caudiculatum Standl. Field Mus. Bot. 11: 141. 1932. Type from Stann Creek Valley, low swampy forest, *Schipp* S297. A large glabrous woody vine; leaflets oblong or elliptic-oblong, long-acuminate, shining; corolla creamy white.

Petastoma patelliferum (Schlecht.) Miers. Leaflets narrowly or broadly ovate, acuminate, rounded at the base, sometimes pubescent; flowers pink or purple; corolla 3.5–4 cm. long; capsules 20–30 cm. long, smooth.

PLEONOTOMA Miers

Pleonotoma diversifolium (HBK.) Bur. & Schum. *Cydista diversifolia* Miers. Occasional in thickets; Mexico to Honduras. A small or large vine; leaflets 2 or 3, ovate to elliptic-oblong, acute, obtuse to shallowly cordate at the base, glabrous; corolla purple or almost white, 3–4 cm. long; capsule linear, compressed.

SALDANHAEA Bur.

Saldanhaea costaricensis Kraenzl. *Duppy Beans.* Corozal District, *Gentle* 397; ranging to Costa Rica. A woody vine, provided with tendrils; leaflets 3, elliptic, acuminate, densely stellate-tomentose when young; calyx minutely stellate-tomentose, tubular-campanulate; corolla pink or purple, 5 cm. long, minutely stellate-tomentose outside.

TABEBUIA Gómez

Trees; leaves opposite, long-stalked, the leaflets usually 5, digitate, entire or toothed, stalked; flowers large and showy, in

terminal panicles, cymes, or heads, usually produced when the tree is leafless; pods pendent, long and cylindric, containing numerous broadly winged seeds.

Flowers yellow; pubescence of fine branched hairs....*T. chrysantha.*
Flowers pink; pubescence of minute scales.....*T. pentaphylla.*

Tabebuia chrysantha (Jacq.) Nicholson. *Cortez. Hahauche* (Yucatan, Maya). Hillbank, *C. S. Brown;* Mexico to northern South America. A medium-sized tree; leaflets obovate, acuminate, entire or serrate; flowers densely clustered at the ends of the branches; capsule 20–30 cm. long, often tubercled. Wood olive-brown, very hard, heavy, tough, strong, and durable, medium-textured, rather splintery, finishes smoothly; used locally for truck parts. (See *T. of T. A.*, pp. 541–544.)

Tabebuia pentaphylla (L.) Hemsl. *Mayflower. Maqueliz, Roble. Hokab* (Yucatan, Maya). Frequent in forest; widely distributed in tropical America. A large or medium-sized tree; leaflets entire, acute or acuminate, with minute appressed scales; flowers in few-flowered lax corymbs, 7–10 cm. long; pods 20–35 cm. long or larger, smooth. One of the abundant trees of Central America, and one of the most beautiful, because of the great abundance of flowers, which vary in color from almost white to deep purple-pink. The tree flowers ordinarily at the end of the dry season. Wood brownish, with fine striping of dark brown showing conspicuously on tangential surface; of medium density, strong, easy to work, holds its place well when manufactured, is fairly durable; used locally for cattle yokes; is suitable for furniture and interior trim. (See *T. of T. A.*, pp. 534–536; *Trop. Woods* 8: 8–9.)

TANAECIUM Swartz

Tanaecium Zetekii Standl. Jacinto Creek, Machaca, *Schipp* S561; Panama. A large woody vine; leaflets 2 or 3, large, oblong to elliptic, acute or acuminate, shallowly and very narrowly cordate at the base, somewhat hairy beneath or almost glabrous; flowers showy, white or creamy yellow, the calyx campanulate, truncate, very minutely puberulent; corolla 7–8.5 cm. long, the tube narrow and slender, the lobes short.

TYNNANTHUS Miers

Woody vines, provided with tendrils; leaflets 2 or 3, thin; flowers small, in small or large panicles; calyx turbinate or campanulate,

truncate or denticulate; corolla deeply bilabiate; capsule compressed, elongate, linear.

Corolla brown-glandular outside; leaflets rounded at the base. *T. hyacinthinus.*

Corolla whitish-pubescent outside, not glandular; leaflets acute or acutish at the base..... *T. guatemalensis.*

Tynnanthus guatemalensis Donn. Smith. Maskall, *Gentle* 1324; Guatemala. A slender vine; leaflets usually 3, oblong-elliptic or obovate, abruptly short-acuminate, glabrous; flowers apparently pink, the corolla scarcely 1 cm. long.

Tynnanthus hyacinthinus Standl. Carnegie Inst. Wash. Publ. 461: 87. 1935. Type from Jacinto Creek, *Schipp* S661; in forest, Camp 33, Guatemalan boundary, *Schipp* 1241. A vine as much as 18 meters long, the stem 7 cm. in diameter; stipules large and leaflike; leaflets broadly ovate or elliptic, acute or short-acuminate; corolla pink or purple, 1.5 cm. long.

MARTYNIACEAE. Unicorn Plant Family

MARTYNIA L. Unicorn Plant

Martynia annua L. Roaring Creek.

GESNERIACEAE. Gesneria Family

ACHIMENES P. Br.

Achimenes coccinea Pers.

Achimenes pulchella (L'Hér.) Hitchc.

BESLERIA L.

Besleria laxiflora Benth. Pueblo Viejo, *Schipp* S639.

CODONANTHE Hanst.

Codonanthe confusa Sandwith. Roaring Creek, *Lundell;* Sittee River, *Schipp;* southward to the Guianas. A small epiphytic shrub with small axillary pink flowers.

COLUMNEA L.

Columnea purpurata Hanst. Camp 33, Guatemalan boundary, *Schipp* S683; extending to Costa Rica. A small epiphytic shrub with showy red flowers.

Columnea sulfurea Donn. Smith. Forest Home, *Schipp* S412; Guatemala. A small, somewhat woody epiphyte with densely hairy leaves and long yellow flowers.

DRYMONIA Mart.

Drymonia spectabilis (HBK.) Mart. Occasional; widely distributed in tropical America. An epiphytic shrub, often more or less scandent, with thick, very rough leaves; corolla dull dark red, 5 cm. long, with rounded toothed lobes.

LENTIBULARIACEAE. Bladderwort Family

GENLISEA St. Hil.

Genlisea luteoviridis C. Wright. All Pines, *Schipp* 607; Cuba. The genus has not been reported elsewhere in Central America. Determination by Dr. J. H. Barnhart.

UTRICULARIA L. Bladderwort

Utricularia adenantha Standl., ined. All Pines, *Schipp* S89.

Utricularia aureola Blake, Contr. Gray Herb. 52: 88. 1917. Type from beach of Manatee Lagoon, in wet sand, *Peck* 235; All Pines, *Schipp* 630.

Utricularia fimbriata HBK. Honey Camp; All Pines.

Utricularia juncea Vahl. Pine ridges; *Schipp* 633, distributed as a new species, is, according to Barnhart, only a small-flowered form of this species.

Utricularia juncea Vahl, f. **minima** Blake, Contr. Gray Herb. 52: 89. 1917. Type from Toledo, *Peck* 502a; collected also by Schipp at All Pines.

Utricularia macerrima Blake, Contr. Gray Herb. 52: 89. 1917. Type collected in open swampy ground near Manatee Lagoon, *Peck* 222; All Pines, *Schipp* 560, S139. In the original description of this species it was stated that the flowers were probably yellow, but Schipp reports that those of his No. 560 are dark blue, while the corollas of No. S139 are white.

Utricularia obtusa Swartz. All Pines, *Schipp* 603, S87.

Utricularia Peckii Blake, Contr. Gray Herb. 52: 90. 1917. Type collected in mud near Manatee Lagoon, *Peck* 371; All Pines, *Schipp* 632.

Utricularia purpurea Walt. All Pines, *Schipp* 608, S90.

Utricularia pusilla Vahl. All Pines, *Schipp* 680; Honey Camp, *Meyer* 147.

Utricularia resupinata B. D. Greene. All Pines, *Schipp* 629, 659.

ACANTHACEAE. Acanthus Family

Chiefly herbs, but sometimes shrubs or small trees; stems often much constricted below the nodes in dried specimens; leaves opposite, entire or essentially so, without stipules; flowers perfect, usually irregular and more or less 2-lipped, frequently large and showy; calyx inferior, of 4–5 distinct or united sepals; stamens 2 or 4, inserted on the corolla tube alternate with the lobes; anthers 2-celled, the cells often inserted at different heights; fruit usually a 2-celled capsule, often contracted and stalked at the base, the few seeds attached by a thick hook-like funicle or stalk. Nearly all the local members of the family are herbs, as in Central America generally.

APHELANDRA R. Br.

Aphelandra aurantiaca (Scheidw.) Lindl. Forest Home, Toledo, *Schipp* 1063. A herbaceous plant. Var. *stenophylla* Standl. of this species is represented by *Schipp* S625 from Río Viejo.

Aphelandra Deppeana Schlecht. & Cham. *Chacanal* (Maya). Frequent in thickets; widely distributed in tropical America. A stout shrub 1–2 meters high; leaves mostly oblanceolate-oblong, thin, long-tapering to the base, pubescent beneath; flowers bright red, 4 cm. long, in dense bracted spikes, the green bracts overlapping, sharply toothed. This is reported by some of the collectors as a small tree, but probably in error.

BELOPERONE Nees

Beloperone crenata Standl. Carnegie Inst. Wash. Publ. 461: 88. 1935. Type from Pueblo Viejo, *Schipp* S694; Toledo District, *N. S. Stevenson* 82, 90. A coarse herb or a shrub 2 meters high, with large, oblong, obscurely crenate leaves; flowers large, pale yellow, in dense bracted spikes.

BLECHUM Juss.

Blechum pedunculatum Donn. Smith.

Blechum pyramidatum (Lam.) Urban. *Akabxiu* (Yucatan, Maya). One of the most abundant weeds of Central America.

BRAVAISIA DC.

Shrubs or small trees; leaves petiolate; flowers in panicles or cymes; calyx 5-cleft, the sepals rounded at the apex; corolla with a short tube and broad throat; stamens 4; ovules 2–4 in each cell of the ovary.

Calyx lobes conspicuously mucronate.....*B. proxima.*

Calyx lobes not mucronate.....*B. tubiflora.*

Bravaisia proxima Blake, Contr. Gray Herb. 52: 96. 1917. Type collected in forest, upper Moho River, *Peck* 730; Jacinto Hills, *Schipp* 1259. A shrub or small tree with glabrous branches and inflorescence; leaves obovate; corolla lavender, 3.5 cm. long.

Bravaisia tubiflora Hemsl. *Hulubal, Hulaba, Hulup* (Maya). Occasional in thickets or forest; Yucatan. A shrub or small tree, the trunk sometimes 7 cm. in diameter; leaves elliptic or oblong-elliptic, obtuse to acuminate; corolla purplish, 2–2.5 cm. long; branches and inflorescence more or less pubescent.

DIATEINACANTHUS Lindau

Diateinacanthus hondurensis Lindau. *Odontonema paniculiferum* Blake, Contr. Gray Herb. 52: 104. 1917. Type of *O. paniculiferum* from Manatee Lagoon, *Peck* 278. Ranging to Honduras. A slender shrub 1.5–3 meters high, glabrous or nearly so; leaves lance-oblong, long-acuminate; flowers pale yellow, 1.5 cm. long, in large lax many-flowered panicles.

DICLIPTERA Juss.

Dicliptera acuminata Juss. Camp 31, Guatemalan boundary, *Schipp* S684.

Dicliptera assurgens (L.) Juss. *Nimiz* (Yucatan, Maya).

Dicliptera magniflora Blake, Contr. Gray Herb. 52: 98. 1917. Type, *Peck* 622a, without locality.

ERANTHEMUM L.

Eranthemum adenocarpum Blake, Contr. Gray Herb. 52: 98. 1917. Type from Toledo, damp low forest, *Peck* 830. Collected by Schipp also at Pueblo Viejo, Ocotal, and Machaca.

Eranthemum tetrasepalum Blake, Contr. Gray Herb. 52: 99. 1917. Type from Moho River, in forest, *Peck* 552.

HYGROPHILA R. Br.

Hygrophila conferta Nees.

JACOBINIA Moric.

Herbs or shrubs; flowers large and showy, in cymes, spikes, or panicles, often subtended by large green bracts; corolla conspicuously 2-lipped, the calyx 5-parted; stamens 2, the anther cells unequally inserted, not appendaged at the base; capsule small, usually 4-seeded.

Corolla glabrous outside, red.....*J. scarlatina.*

Corolla hairy outside, yellow or orange.

Panicles conspicuously leafy-bracted; corolla yellow...*J. umbrosa.*

Panicles with small and inconspicuous bracts; corolla orange. *J. ensiflora.*

Jacobinia ensiflora Standl. Field Mus. Bot. 8: 45. 1930. Type from Middlesex, in forest, *Schipp* 354. A slender shrub a meter high; leaves narrowly lance-oblong, glabrous; panicles small and dense, on a very long peduncle, conspicuously villous; corolla linear, 6 cm. long.

Jacobinia scarlatina Blake, Contr. Gray Herb. 52: 102. 1917. *Siitz* (Maya). Type from forests near Manatee Lagoon, *Peck* 430; Maya Mounds and elsewhere. A straggling shrub as much as 4.5 meters long, almost glabrous; leaves lanceolate to ovate; corolla 3.5–4 cm. long. The crushed leaves are soaked in water, to produce a bluish infusion used locally like indigo for whitening clothes when they are being washed. Other species of the genus are used in the same manner elsewhere in Central America and in Mexico.

Jacobinia umbrosa (Benth.) Blake. A coarse herb with very showy, yellow flowers.

JUSTICIA L.

Justicia comata (L.) Lam.

Justicia Peckii (Blake) Standl., comb. nov. *Dianthera Peckii* Blake, Contr. Gray Herb. 52: 97. 1917. Type from high banks of the upper Moho River, *Peck* 722; Banana Bank, *Schipp;* Río Grande, *Schipp* S473.

Justicia pectoralis Jacq. *Trébol* (Yucatan).

LEPIDAGATHIS Willd.

Lepidagathis alopecuroides (Nees) Lindau.

LOUTERIDIUM Wats.

Louteridium Donnell-Smithii Wats. Collected by Peck, No. 780; Toledo, *Schipp* 1110. A large showy herb, perhaps some-

what shrubby at times, reported by Schipp, probably in error, as a tree of 9 meters; flowers very large, green flushed with brown.

MENDONCIA Vell.

Mendoncia belizensis Standl. Field Mus. Bot. 11: 142. 1932. Type from Stann Creek Valley, *Schipp* 861. A herbaceous vine.

Mendoncia costaricensis Oerst. Big Rock, *Schipp* 1051.

ODONTONEMA Nees

Odontonema cuspidatum (Nees) Kuntze. In forest; Mexico and Central America. A slender shrub 1–2 meters high, almost glabrous; corolla 2–2.5 cm. long, bright red, scarcely 2-lipped. One of the collections is reported as having white corollas.

RUELLIA L.

Ruellia geminiflora HBK. *Yamcotil* (Yucatan, Maya).

Ruellia longipila Standl. Field Mus. Bot. 8: 44. 1930. Type from Stann Creek, *C. L. Stocker* 20; Roaring Creek, *Lundell* 322; Stann Creek Valley, *Schipp* 976.

Ruellia obtusata Blake, Contr. Gray Herb. 52: 105. 1917. Type from Toledo, *Peck* 871.

Ruellia pereducta Standl. Camp 31, Guatemalan boundary, *Schipp* S645; also in Campeche.

Ruellia tuberosa L. Honey Camp.

THUNBERGIA Retz

Thunbergia alata Boj. El Cayo, *Chanek* 200, cultivated or perhaps naturalized. A slender vine, native of Africa.

Thunbergia grandiflora Roxb. Corozal-Pachacan Road, *Gentle*, apparently naturalized. A large vine, native of the East Indies.

RUBIACEAE. Coffee Family

Herbs, shrubs, or trees, sometimes vines; leaves opposite or whorled, with persistent or deciduous stipules; flowers small or large and showy; ovary inferior; corolla of united petals; fruit various in form, dry or fleshy. One of the largest families of tropical plants, easy to recognize by the combination of opposite leaves, stipules, inferior ovary, and gamopetalous corolla. The local species are of scant economic importance, but the family includes such valuable

plants as coffee, cinchona, and ipecac. The woods are mostly light-colored, hard, heavy, fine-textured, not durable, and of little utility.

Plants armed with spines.

Flowers in globose heads; spines hooked..... *Uncaria.*

Flowers not in heads; spines straight..... *Randia.*

Plants unarmed.

Plants herbaceous.

Plants scandent.

Fruit capsular; corolla red..... *Manettia.*

Fruit baccate; flowers white..... *Sabicea.*

Plants not scandent.

Fruit a berry or drupe. Flowers in heads.

Fruit many-seeded; leaves not or scarcely cordate at the base..... *Coccocypselum.*

Fruit containing 2 one-seeded nutlets; leaves cordate. *Geophila.*

Fruit dry.

Fruit a capsule, containing numerous seeds.... *Oldenlandia.*

Fruit of 2–4 one-seeded cells.

Stipules without bristles; flowers in cymes... *Declieuxia.*

Stipules furnished with bristles; flowers not in cymes.

Fruit circumscissile..... *Mitracarpus.*

Fruit not circumscissile.

Fruit with 3–4 cocci..... *Richardia.*

Fruit 2-celled.

Cells of the fruit opening at maturity.

Cocci opening only at the base... *Hemidiodia.*

Cocci opening at the apex.

Cells of the fruit unlike, one opening, the other remaining closed..... *Spermacoce.*

Cells alike, both opening..... *Borreria.*

Cells of the fruit not opening at maturity.

Cocci separating from a persistent axis, this surmounted by the persistent calyx; flowers large and showy..... *Crusea.*

Cocci not separating from an axis; flowers small and inconspicuous..... *Diodia.*

Plants trees or shrubs.

Fruit dry, capsular.

Flowers in elongate spikes.....*Alseis.*

Flowers not in spikes.

Calyx lobes unlike, one of the lobes in some of the flowers developing into a large petal-like white limb. *Calycophyllum.*

Calyx lobes all alike, none of them colored.

Corolla large, the tube 10–16 cm. long.....*Lindenia.*

Corolla much smaller, the tube usually less than 5 cm. long.

Plants epiphytic; leaves rounded at the apex, leathery. *Hillia.*

Plants terrestrial; leaves acute or acuminate, thin.

Capsule strongly compressed; corolla asymmetric, 5 cm. long.....*Coutarea.*

Capsule not compressed; corolla symmetric, much smaller.

Stamens exserted; lobes of the corolla as long as the tube.....*Exostema.*

Stamens not exserted; lobes of the corolla much shorter than the tube.....*Rondeletia.*

Fruit not a capsule, baccate or drupaceous, or sometimes of dry cocci.

Flowers in very dense globose stalked heads; fruit dry. *Cephalanthus.*

Flowers not in globose heads.

Ovules more than one in each cell of the ovary. Fruit fleshy.

Flowers in spike-like panicles.....*Gonzalagunia.*

Flowers not in spike-like panicles.

Flowers in many-flowered cymes or panicles.

Corolla whitish; flowers in large thyrsiform panicles; fruit blue.....*Bertiera.*

Corolla yellow, orange, or red; flowers in cymes, usually secund on the branches; fruit red or black.....*Hamelia.*

Flowers solitary or in small few-flowered cymes.

Corolla tube slender, 12–16 cm. long, curved in bud..... *Posoqueria.*

Corolla tube less than 3 cm. long, not curved in bud.

Stipules united to form a cap; flowers in cymes. *Amaioua.*

Stipules not united to form a cap.

Flowers clustered at the ends of the branches or solitary; seeds large..... *Alibertia.*

Flowers in axillary or lateral cymes; seeds minute..... *Hoffmannia.*

Ovule 1 in each cell of the ovary.

Fruit dry, separating at maturity into 2 narrow cocci. *Machaonia.*

Fruit more or less fleshy, not separating into cocci.

Fruit a drupe containing 5 or more nutlets.. *Erithalis.*

Fruit 1-seeded, or containing 2 nutlets.

Fruit strongly compressed laterally.

Flowers in axillary panicles or racemes. *Chiococca.*

Flowers clustered in the leaf axils.... *Asemnanthe.*

Fruit not compressed.

Fruit containing a very hard stone with 2 or more cells.

Plants glabrous; flowers secund upon the branches of the bifurcate inflorescence. *Antirhea.*

Plants pubescent.

Calyx truncate..... *Guettarda.*

Calyx deeply lobate..... *Anisomeris.*

Fruit containing 2 nutlets or 1-seeded.

Stipules with bristles; flowers sessile in the leaf axils..... *Ernodea.*

Stipules without bristles.

Flowers in stalked axillary heads, the heads without an involucre.

Fruits at maturity fused together and forming a multiple fruit..... *Morinda.*

Fruits not fused..... *Appunia.*

Flowers not in stalked axillary heads or, if so, the heads surrounded by an involucre of bracts.

Fruit 1-seeded, the seed horizontal. *Faramea.*

Fruit 2-seeded, the seeds vertical.

Flowers in dense heads surrounded by an involucre of green or colored bracts. *Cephaelis.*

Flowers not in heads.

Corolla somewhat curved, the tube enlarged on one side at the base. *Palicourea.*

Corolla not curved, not enlarged at the base of the tube.

Corolla lobes contorted.....*Ixora.*

Corolla lobes valvate.

Septum of the fruit thick, persistent.....*Psychotria.*

Septum of the fruit thin, easily rupturing.....*Coussarea.*

ALIBERTIA A. Rich.

Alibertia edulis (L. Rich.) A. Rich. *Wild Guava. Guayaba de monte* (Guatemala). Frequent in thickets; southern Mexico to Brazil. A densely branched, glabrous shrub 1–3 meters high; leaves oblong to ovate, acute; flowers dioecious, clustered at the tips of the branches, white, 2.5 cm. long; fruit globose, 2.5 cm. broad, yellow. The fruit is edible, but of poor flavor.

ALSEIS Schott

Alseis yucatanensis Standl. *Wild Mamee. Cacao-che* (Yucatan). Occasional in forest; Yucatan, Petén. A tree; leaves obovate, 8–30 cm. long, thin, acuminate, long-attenuate to the base, sparsely pilose beneath on the nerves or glabrate; flowers in long dense spike-like racemes; corolla broadly campanulate, 2.5 mm. long; capsule clavate, 14 mm. long.

AMAIOUA Aubl.

Amaioua corymbosa HBK. Stann Creek; Panama and northern South America. A shrub or tree 2–4.5 meters high; leaves

large, oval or elliptic, acuminate, almost glabrous; inflorescence terminal, cymose, sericeous, the white flowers 1 cm. long, dioecious; berries oval, black, 1.5 cm. long.

ANISOMERIS Presl

Anisomeris protracta (Bartl.) Standl. Frequent in pine ridges; southern Mexico to Honduras. A slender shrub a meter high; leaves lance-oblong, long-acuminate, thin, thinly sericeous beneath; flowers white, in small stalked axillary cymes; corolla sericeous, the tube 7–10 mm. long; drupe oval, dark blue, 5 mm. long.

ANTIRHEA Commers.

Antirhea lucida (Swartz) Benth. & Hook. Jacinto Hills, in forest, *Schipp* S616; West Indies. Reported by Schipp as a tree of 18 meters with trunk diameter of 60 cm., but usually much smaller, glabrous; leaves elliptic or oblong, acute or obtuse; flowers very small, white, sessile and secund along the slender branches of a once bifid cyme; fruit juicy, oblong, 2-celled, black, 5–7 mm. long.

APPUNIA Hook. f.

Appunia guatemalensis Donn. Smith. *Morinda mesochora* Standl. In thickets, occasional; Guatemala. A slender glabrous shrub 1–2 meters high; leaves narrowly lanceolate to elliptic, long-acuminate; flowers 1 cm. long, in stalked axillary heads; corolla brown-purple outside, white within; fruit black, juicy, 5–6 mm. long. The other members of the genus inhabit the Guianas.

ASEMNANTHE Hook. f.

Asemnanthe pubescens Hook. f. Honey Camp; Yucatan. A densely pubescent shrub; leaves lanceolate or ovate, small, acute; flowers small, yellow, in axillary clusters; fruit small, orbicular, juicy, strongly compressed. The genus consists of a single species.

BERTIERA Aubl.

Bertiera guianensis Aubl. Stann Creek; Mullins River Road, in wet thickets or forest; ranging to Brazil. A slender shrub 2.5 meters high; leaves lance-oblong, almost sessile, glabrate; flowers very small, white, in one-sided cymes, these arranged in large narrow terminal panicles; berries globose, ribbed, blue, 3–4 mm. in diameter.

BORRERIA Meyer

Borreria laevis (Lam.) Griseb.

Borreria latifolia (Aubl.) Schum. All Pines. Used locally as a remedy for snake bites, according to Schipp.

Borreria ocimoides (Burm.) DC.

Borreria rhadinophylla Robinson, Proc. Amer. Acad. 45: 409. 1910. Type collected on dry sandy pine ridges, *Peck* 180.

Borreria suaveolens Meyer.

Borreria verticillata (L.) Meyer. *Nizots* (Yucatan, Maya).

CALYCOPHYLLUM DC.

Calycophyllum candidissimum (Vahl) DC. *Salamo* (Honduras). Widely distributed in tropical America. A large tree; leaves elliptic or ovate, small, long-petioled, nearly glabrous; flowers small, in dense corymb-like panicles; one calyx lobe in some of the flowers expanded into a large white petal-like limb; fruit a small capsule. One of the showiest trees of Central America, often appearing as a huge mass of white because of the profusion of enlarged calyx lobes, which persist for a long time, finally turning brown. Wood pale brown, hard, heavy, strong, highly elastic, fine-textured, usually straight-grained, easy to work, finishes very smoothly; timber of same species from Cuba used in United States under name of "Lancewood" for archery bows; suitable for tool handles. (See *T. of T. A.*, pp. 547–548.)

CEPHAELIS Swartz

Shrubs or small trees, closely related to *Psychotria*, but distinguished by having dense flower heads surrounded by an involucre of large or small, often brightly colored bracts.

Flower heads sessile. Leaves glabrous.....*C. glomerulata.*

Flower heads long-stalked.

Leaves glabrous.....*C. elata.*

Leaves densely hairy.....*C. tomentosa.*

Cephaelis elata Swartz. Frequent in forest and thickets; southern Mexico to Colombia; West Indies. A glabrous shrub or tree 3–7.5 meters high, the trunk sometimes 10 cm. in diameter; leaves large, narrowly oblong; heads large, the bracts wine-red; corolla white. A beautiful and showy plant.

Cephaelis glomerulata Donn. Smith. Occasional in huamil or forest; ranging to Guatemala and Costa Rica. A glabrous shrub a meter high; flower heads small, the short bracts whitish, turning purple; corolla white.

Cephaelis tomentosa (Aubl.) Vahl. Frequent in forest or thickets; southern Mexico to Brazil. A slender and rather weak, densely hairy shrub; principal bracts 2, about 3.5 cm. broad, bright red; flowers yellow; fruits blue. An exceptionally conspicuous and brilliant plant.

CEPHALANTHUS L.

Cephalanthus occidentalis L. Maskall, *Gentle* 1254; United States to Honduras. A shrub or small tree; leaves opposite or ternate, ovate to lanceolate, acuminate, glabrous or pubescent; flowers small, white, in very dense, spheric heads 1 cm. or more in diameter; fruit dry, 2–4-celled, indehiscent.

CHIOCOCCA P. Br.

Shrubs or small trees, usually glabrous; flowers small, white, in axillary, simple or branched, usually one-sided racemes; calyx 5-lobed; corolla funnelform, the lobes valvate in bud; fruit small, fleshy, white, usually orbicular and compressed, containing two 1-seeded nutlets.

Corolla 8–10 mm. wide; calyx lobes rounded or almost obsolete; fruit only slightly compressed.....*C. pachyphylla.*

Corolla 3–6 mm. wide; calyx lobes acute; fruit strongly compressed. *C. alba.*

Chiococca alba (L.) Hitchc. *Canchacche* (Yucatan, Maya). Frequent in thickets, especially near the seashore; widely distributed in tropical America. A glabrous shrub, sometimes elongate and climbing, the branches usually drooping; leaves small, thick, lustrous, ovate or lanceolate; flowers small, white, in axillary panicles; fruit circular, flattened, white, juicy, 4–8 mm. broad.

Chiococca pachyphylla Wernham. *Snowberry.* Eldorado, in forest, *Schipp* S393; southern Mexico. A subscandent shrub, glabrous; leaves stalked, elliptic or ovate, leathery, shining; fruit 6–7 mm. long.

COCCOCYPSELUM P. Br.

Coccocypselum glabrum DC. West of Baldy Sibun, *J. B. Kinloch;* known elsewhere only in Panama.

Coccocypselum guianense (Aubl.) Schum. Honey Camp.

Coccocypselum herbaceum Lam. Middlesex, *Schipp* 424.

Coccocypselum hirsutum Bartl. El Cayo District, *Bartlett* 11599.

COFFEA L. Coffee

Coffea arabica L. *Café.* Coffee, a native of tropical Africa, is planted in the Colony for local use, but the inhabited parts of the region have, for the most part, too low an elevation for the commercial production of this crop, which is so important in many parts of Central America.

COUSSAREA Aubl.

Coussarea impetiolaris Donn. Smith. Jacinto Creek, in forest, *Schipp* 1187; Machaca, *Schipp* 1207, S558; ranging to Panama. A tree as much as 7 meters high, with trunk diameter of 7–10 cm., glabrous except for the inflorescence; leaves large, oblong or elliptic-oblong, abruptly short-pointed, tapering to the base; flowers white, 1.5 cm. long, in short rounded panicles, the corolla lobes narrow and spreading; fruit oval, fleshy, 2 cm. long.

COUTAREA Aubl.

Coutarea hexandra (Jacq.) Schum. In thickets on high ridges; widely distributed in tropical America. A slender tree with bitter bark, 6 meters high; leaves glabrate, ovate, acuminate; flowers in small cymes, the corolla very asymmetric, purplish white or greenish, 5 cm. long; capsule strongly compressed, obovate, 2.5–4.5 cm. long. In Salvador the bark is employed as a substitute for quinine.

CRUSEA Cham. & Schlecht.

Crusea calocephala DC. *Verbena silvestre, Heliotropio silvestre* (Guatemala). El Cayo District.

DECLIEUXIA HBK.

Declieuxia fruticosa (Willd.) Kuntze, var. **mexicana** (DC.) Standl., comb. nov. *D. mexicana* Willd. El Cayo District, *Bartlett* 11671.

DIODIA L.

Diodia brasiliensis Spreng. var. **angulata** (Benth.) Standl. *Triodon angulatum* Benth. Butcher Burn, Sibun River, *Bartlett* 11374; Mexico to Honduras. A stiff, densely branched shrub 30–60 cm. high, the often fascicled leaves 1–2 cm. long; flowers minute, white, in long interrupted spikes. The typical form of the species,

from which this plant differs scarcely at all, grows from Brazil to Argentina.

Diodia rigida (Willd.) Cham. & Schlecht.

Diodia maritima Thonn. New Town, sea beach, *Schipp* 809.

Diodia sarmentosa Swartz.

ERITHALIS L.

Erithalis fruticosa L. All Pines, edge of mangrove swamp, *Schipp* 583; Yucatan; West Indies. A glabrous shrub a meter high; leaves orbicular to obovate, leathery, rounded at the apex; flowers small, white, in axillary cymes; drupe globose, black, 2.5–4 mm. in diameter.

ERNODEA Swartz

Ernodea littoralis Swartz. Freshwater Cay, on beach, *Schipp* 928; Yucatan, Honduras, West Indies, southern Florida. A usually prostrate shrub; leaves lanceolate or oblong, sessile or nearly so; flowers small, yellow, sessile in the leaf axils; fruit a small yellow drupe.

EXOSTEMA L. Rich.

Exostema mexicanum Gray. *Sabak-che.* On high ridge, *Winzerling* III.4; southern Mexico. A tree 18 meters high, the trunk 45 cm. in diameter (in other regions usually much smaller); leaves oblong-ovate, long-acuminate, barbate beneath in the axils of the nerves; flowers 1.5–2 cm. long, in dense terminal cymes; fruit a small narrow capsule.

FARAMEA Aubl.

Glabrous shrubs or trees; flowers medium-sized, in terminal corymbs; fruit large, juicy, the single seed horizontal.

Stipules almost distinct, not sheathing; corolla white. *F. occidentalis.*

Stipules united to form a sheathing tube.

Lobes of the corolla longer than the tube..... *F. brachysiphon.*

Lobes of the corolla about equaling the tube..... *F. belizensis.*

Faramea belizensis Standl. Carnegie Inst. Wash. Publ. 461: 90. 1935. Type *Schipp* S721, the locality not indicated. Glabrous; leaves short-petiolate, ovate to oblong, caudate, obtuse or acute at the base; inflorescence cymose-umbellate, pedunculate, many-flowered; corolla tube about 1 cm. long.

Faramea brachysiphon Standl. Field Mus. Bot. 8: 62. 1930. Type from Middlesex, in jungle, *Schipp* 345. A shrub 2 meters

high; leaves narrowly oblong, thin, acuminate; corolla 8 mm. long, the lobes longer than the tube. According to the collector, a beautiful shrub, as are the other Farameas with sky-blue flowers.

Faramea occidentalis (L.) Rich. Middlesex, in forest; widely distributed in tropical America. A shrub or tree 4.5–9 meters high, the trunk 7–10 cm. in diameter; leaves oblong, acuminate, thick; corolla 2.5 cm. long, with long narrow tapering lobes; fruit depressed-globose.

GEOPHILA Don

Geophila herbacea (Jacq.) Schum. A creeping herb.

Geophila trichogyne (Muell. Arg.) Standl. Temash River, in forest, 90 meters, *Schipp* S918. A South American species, unknown elsewhere in North America.

GONZALAGUNIA Ruiz & Pavón

Gonzalagunia panamensis (Cav.) Schum. Mullins River Road, edge of thicket; southern Mexico to Colombia. A slender shrub 2 meters high; leaves ovate or lanceolate, pilose beneath; flowers white, 10–17 mm. long, in long spike-like panicles; fruit juicy, depressed-globose, 4-celled.

GUETTARDA L.

Shrubs or small trees; flowers in axillary cymes, usually secund on the branches; calyx truncate; fruit drupaceous, hard, almost dry, the stone 4–9-celled.

Leaves, at least part of them, more or less cordate at the base, covered beneath with a minute pale tomentum, usually 7–14 cm. wide.....*G. Combsii.*

Leaves obtuse or acute at the base, without tomentum, smaller.

Pubescence of the lower leaf surface of loose spreading hairs.
G. Gaumeri.

Pubescence of the leaves closely appressed.

Drupes 2 cm. in diameter.....*G. macrosperma.*

Drupes less than 1 cm. in diameter.....*G. elliptica.*

Guettarda Combsii Urban. *G. Seleriana* Standl. *Glassy Wood.* In forest or thickets, frequent; Yucatan. A tree, sometimes 12–24 meters high, with a trunk 25–60 cm. in diameter; leaves long-petioled, elliptic to broadly rhombic-ovate, green and glabrous above; flowers white, 2 cm. long, with slight perfume.

Guettarda elliptica Swartz. *Prickle wood. Kiichche* (Maya). Honey Camp; Mexico, West Indies, southern Florida. A shrub 3 meters high; leaves oval to obovate, thin, obtuse or rounded at the apex; flowers white, 9–12 mm. long; fruit red.

Guettarda Gaumeri Standl. Honey Camp; Yucatan. A shrub; leaves oblong to elliptic, acute or obtuse, densely pilose; cymes mostly 3-flowered.

Guettarda macrosperma Donn. Smith. Temash River; Forest Home; southward to Panama. A small tree, as much as 7 meters high, with trunk diameter of 10 cm.; leaves rather large, thin, acute or acuminate; flowers white.

HAMELIA Jacq.

Shrubs or small trees; leaves opposite or whorled, thin, petioled; flowers mostly tubular, secund along the branches of terminal cymes; fruit a 5-celled berry.

Leaves opposite, almost glabrous; corolla yellow..... *H. axillaris.*

Leaves whorled, densely pubescent; corolla red or orange.

Corolla minutely puberulent; calyx lobes minute..... *H. patens.*

Corolla villous; calyx lobes elongate..... *H. Rovirosae.*

Hamelia axillaris Swartz. In forest; Central America, West Indies, and South America. A shrub or small tree; corolla 1–1.5 cm. long; berries 5–6 mm. long.

Hamelia patens Jacq. *Coralillo. Xcanan, Neanan, Chactoc* (Maya). Common in thickets; generally distributed in tropical America. A slender shrub 1–4.5 meters high; leaves ternate, lance-oblong to ovate, acute or acuminate; flowers orange-red, 14–20 mm. long; berries red at first, becoming black, 6–10 mm. long. One of the most common weedy shrubs of Central America. The fruit is edible but of poor flavor.

Hamelia Rovirosae Wernham. *H. purpurascens* Blake, Contr. Gray Herb. 52: 105. 1917. Mullins River Road, *Schipp* 223; type of *H. purpurascens* from pine ridge near Manatee Lagoon, *Peck* 104; southern Mexico to Panama. A shrub or small tree 2–7.5 meters high, the trunk sometimes 10 cm. in diameter; corolla dull red or orange-red, nearly 3 cm. long; fruit purple-black. *H. purpurascens* is described as a partly climbing shrub 10–40 feet high, but probably in error, since the plant as I have seen it in various places is always quite as erect as other species of the genus.

HEMIDIODIA Schum.

Hemidiodia ocimifolia (Willd.) Schum.

HILLIA Jacq.

Hillia tetrandra Swartz. Pine Peak at 540 meters, *D. Stevenson;* widely distributed in tropical America. A small glabrous epiphytic shrub; leaves small, oblong or obovate, leathery, rounded at the apex; flowers solitary at the ends of the branches; corolla white, 3–8 cm. long; capsule slender, 5–7 cm. long.

HOFFMANNIA Swartz

Small shrubs or herbs; leaves opposite or whorled; flowers small, white, yellow, or red, in axillary, sessile or stalked cymes; corolla funnelform or almost rotate, with a long or short tube; ovary 2-celled; fruit a small 2-celled berry.

Cymes arising at the very base of the stem..... *H. rhizantha.*

Cymes axillary, along the middle or upper part of the stem.

Stems sharply 4-angled..... *H. Ghiesbreghtii.*

Stems terete or obtusely angled.

Plants herbaceous; corolla red..... *H. refulgens.*

Plants shrubby; flowers not red..... *H. lenticellata.*

Hoffmannia Ghiesbreghtii (Lem.) Hemsl. Pueblo Viejo, shaded creek banks, *Schipp* S629; Guatemala and southern Mexico. A shrub 1.5 meters high; leaves large, oblong-oblanceolate, thin, long-tapering to the base; flowers yellow; fruit red.

Hoffmannia lenticellata Hemsl. Forests of the southern part of the Colony; Guatemala and southern Mexico. A slender shrub; leaves large, short-petiolate, obovate or elliptic, glabrous.

Hoffmannia refulgens (Hook.) Hemsl. Río Viejo, in forest, *Schipp* S623; southern Mexico to Costa Rica. A small and handsome herb.

Hoffmannia rhizantha Standl. Carnegie Inst. Wash. Publ. 461: 90. 1935. Type from Esperanza Trail, in forest, *Schipp* S731. A shrub or herb about 60 cm. high; leaves large, long-petiolate, oblong-obovate, 23–32 cm. long, glabrous; corolla red.

IXORA L.

Ixora coccinea L. Cultivated for ornament. A shrub with bright red flowers, native of the East Indies.

Ixora Finlaysoniana Wall. A shrub with white flowers, planted for ornament. Native of the East Indies.

Ixora nicaraguensis Wernham. Forest Home, in secondary forest, *Schipp* 1043; southward to Panama. A tree 7.5 meters high, the trunk 12 cm. in diameter; leaves short-stalked, leathery, elliptic-oblong, acute or acuminate, attenuate to the base, glabrous; flowers small, white, in terminal panicles; fruit small, juicy, containing 2 nutlets.

LINDENIA Benth.

Lindenia rivalis Benth. Big Creek, at the edge of water, El Cayo District; southern Mexico to Panama. A stout shrub a meter high or less; leaves oblanceolate to linear-oblong, acuminate; cymes terminal, few-flowered; corolla white, its tube 10–16 cm. long, the lobes 2.5–3 cm. long; capsule pyriform, 1–2 cm. long. A very showy plant when in flower. It grows invariably in or at the edge of water.

MACHAONIA Humb. & Bonpl.

Shrubs or small trees; inflorescence terminal, cymose-paniculate, the small flowers white or whitish; corolla short-funnelform; calyx lobes 4–5, persistent; fruit dry, oblong or obpyramidal, separating into 2 compressed cocci.

Leaves densely pubescent beneath; fruit 5 mm. long, the calyx lobes not elongate.....*M. acuminata.*

Leaves glabrous or nearly so; fruit 2.5 mm. long, the calyx lobes spatulate, much elongate in age.....*M. Lindeniana.*

Machaonia acuminata HBK. Honey Camp, *Lundell* 344; southern Mexico to South America. A slender shrub or small tree.

Machaonia Lindeniana Baill. *Kuchel, Kampocolche* (Yucatan, Maya). Tower Hill Estate; Freshwater Creek; Yucatan and Campeche. A shrub or tree, sometimes 7.5 meters high, with a trunk 10 cm. in diameter.

MANETTIA Mutis

Manettia coccinea (Aubl.) Willd. A herbaceous vine.

MITRACARPUS Zucc.

Mitracarpus glabrescens (Griseb.) Urban. El Cayo District, *Bartlett* 11534, 11631; Cuba. Not reported previously from the continent.

Mitracarpus hirtus (L.) DC.

MORINDA L.

Shrubs or small trees, often more or less scandent or with drooping branches; flowers white, small, in dense stalked heads; corolla tubular-funnelform; calyx truncate; fruit a fleshy globose syncarp.

Leaves mostly elliptic; corolla 15 mm. long.....*M. panamensis.*

Leaves chiefly oblong, lance-oblong, or oblanceolate-oblong; corolla 7–10 mm. long.

Leaves densely pubescent beneath.....*M. yucatanensis.*

Leaves barbate beneath in the axils of the nerves, otherwise glabrous.....*M. Royoc.*

Morinda panamensis Seem. *Turkey Victuals. Concha de Huevo* (Honduras). Moist thickets; British Honduras to Panama. A shrub or tree as much as 9 meters high with a trunk diameter of 15 cm.; leaves barbate beneath in the axils of the nerves; flowers sweet-scented; fruit heads yellow, 1.5 cm. in diameter or larger.

Morinda Royoc L. Wet thickets; British Honduras to Panama, Venezuela, and the West Indies. A shrub or a woody vine.

Morinda yucatanensis Greenm. *Xhoyoc* (Yucatan, Maya). *Piñuela* (Guatemala). Honey Camp, *Lundell* 547; Yucatan and Guatemala. The plant is said to have been employed by the Mayas for dyeing.

OLDENLANDIA L.

Oldenlandia corymbosa L.

Oldenlandia herbacea (L.) DC.

PALICOUREA Aubl.

Shrubs or small trees; leaves large, short-petioled, acuminate; flowers small, in dense thyrsiform panicles; corolla tubular, somewhat swollen on one side at the base; fruit a juicy drupe.

Leaves opposite, glabrous or nearly so.....*P. guianensis.*

Leaves ternate, pubescent beneath.....*P. triphylla.*

Palicourea crocea (Swartz) Roem. & Schult. Jacinto Creek and elsewhere, in forest; a species of wide distribution. A shrub; leaves opposite, glabrous; flowers red.

Palicourea guianensis Aubl. Sittee River, secondary forest, *Schipp* 604; ranging southward through tropical South America. A shrub or small tree, sometimes 6 meters high, with a trunk 7 cm. in diameter; leaves elliptic; flowers yellow; fruit 4–5 mm. long, purplish black.

Palicourea triphylla DC. Moist thickets; ranging far southward into South America. A shrub 3 meters high; leaves oblanceolate-oblong; corolla orange.

POSOQUERIA Aubl.

Posoqueria latifolia (Rudge) Roem. & Schult. *Mountain Guava, Snake-seed. Chintonrol.* Frequent in forest or thickets; southern Mexico to South America. A glabrous shrub or small tree, sometimes 13 meters high, with a trunk 25 cm. in diameter; leaves thick, dark, oval or oblong; flowers white, the very slender corolla tube 12–16 cm. long, the broad lobes 1.5–2.5 cm. long; fruit yellow, resembling a small orange, containing numerous large seeds. When in flower, the tree is an exceptionally showy and handsome one.

PSYCHOTRIA L.

Shrubs or small trees; flowers small, usually white, greenish, or yellowish; fruit a small juicy drupe containing normally 2 small ribbed 1-seeded nutlets. A vast genus, the largest group of the family.

Inflorescence axillary.

Flowers densely clustered in the leaf axils, the inflorescence much shorter than the petioles..... *P. axillaris.*

Flowers in long-stalked panicles, the inflorescence usually much longer than the petioles.

Leaves oblanceolate-linear..... *P. pleuropoda.*

Leaves mostly elliptic or broadly oblong.

Fruit white; leaves thin, not pale beneath.... *P. macrophylla.*

Fruit red; leaves thick and fleshy, very pale beneath. *P. uliginosa.*

Inflorescence terminal.

Stipules deciduous, thin, brown.

Calyx lobes lance-linear, elongate..... *P. horizontalis.*

Calyx lobes triangular to broadly ovate, short, often almost obsolete.

Young branches brown-hirsute..... *P. undata.*

Young branches glabrous or nearly so.

Inflorescence sessile or nearly so.

Leaves broadly elliptic, large, mostly 8–12 cm. wide or broader..... *P. limonensis.*

Leaves narrower, usually less than 6 cm. wide.

Leaves thick and somewhat leathery, mostly obovate or at least broadest above the middle.

P. Oerstediana.

Leaves thin, broadest at or below the middle.

Stipules closed in bud, deciduous as a cap.

P. granadensis.

Stipules separating, acuminate.....*P. sessilifolia.*

Inflorescence pedunculate.

Plants epiphytic; nerves of the fleshy leaves obscure.

P. pendula.

Plants terrestrial; leaves not fleshy, the nerves evident.

Flowers long-pedicellate.....*P. marginata.*

Flowers sessile or nearly so.

Panicles short-pedunculate; leaves mostly 4–8 cm. long.....*P. fruticetorum.*

Panicles long-pedunculate, large; leaves mostly 11–16 cm. long or larger.....*P. flava.*

Stipules green, persistent.

Bractlets large, longer than the calyx, or else broad and rounded at the apex.

Bractlets broad, rounded at the apex.....*P. chiapensis.*

Bractlets narrow, attenuate.

Inflorescence a large panicle, the bracts green or whitish.

P. capitata.

Inflorescence head-like, the bracts reddish...*P. involucrata.*

Bractlets much shorter than the calyx.

Calyx truncate.

Leaves cuspidate-acuminate, oblong-ovate or elliptic; fruit yellow, turning black.....*P. cuspidata.*

Leaves acute or obtuse, obovate or obovate-oblong; fruit red.....*P. microdon.*

Calyx conspicuously dentate.

Corolla glabrous outside; stipules with long subulate lobes.

Stipules 2-lobed.....*P. patens.*

Stipules entire.....*P. grandis.*

Corolla pubescent; stipules short and inconspicuous.

Panicles erect in fruit, their branches strongly ascending.....*P. pubescens.*

Panicles reflexed in fruit, their branches spreading or reflexed.

Leaves long-petiolate, the blades mostly 15–25 cm. long.....*P. crebrinervia.*

Leaves short-petiolate, the blades mostly 7–12 cm. long.....*P. Pittieri.*

Psychotria axillaris Willd. Middlesex, *Schipp* S68; South America; unknown elsewhere in North America. A shrub a meter high, growing in dense forest; corolla cream-colored; fruit black.

Psychotria capitata Ruiz & Pavón. *Palicourea Stevensonii* Standl. Trop. Woods 16: 42. 1928 (type from Middlesex, *N. S. Stevenson;* Yale 10683). Frequent in thickets; Panama and South America. A shrub 2 meters high.

Psychotria chiapensis Standl. *Casada, White Wood. Yaxcanan* (Maya). In thickets or forest; southern Mexico to Panama. An almost glabrous shrub or tree, sometimes 7.5 meters high, with a trunk 10 cm. in diameter; flowers white or greenish.

Psychotria crebrinervia Standl. Big Creek, in jungle, *Schipp* 170; Guatemala and Honduras. A shrub 2 meters high; flowers greenish yellow.

Psychotria cuspidata Bredem. Frequent in forest or thickets; widely distributed in tropical America. A slender glabrous shrub 1–2 meters high; flowers cream-colored.

Psychotria flava Oerst. Honey Camp and El Cayo; Guatemala and southern Mexico. A stout shrub 1–2.5 meters high; flowers white or greenish white.

Psychotria fruticetorum Standl. Frequent; Campeche to Honduras. A dense shrub 1.5 meters high or less; flowers greenish white; fruit red.

Psychotria granadensis Benth. Occasional in thickets; Central America. A shrub 1 meter high. Probably a mere variety of *P. undata.*

Psychotria grandis Swartz. Sand Hill, in forest, *Schipp* 1013; widely distributed in tropical America. A tree 10 meters high, the trunk 18 cm. in diameter; leaves large, obovate-elliptic, glabrous or nearly so; flowers white, in large stalked panicles.

Psychotria horizontalis Swartz. Roaring Creek; Cocquericot; southern Mexico to northern South America and the West Indies. A shrub with greenish white flowers.

Psychotria involucrata Swartz. Frequent in forest or thickets; widely distributed in tropical America. A shrub a meter high with small white flowers.

Psychotria limonensis Krause. Middlesex, in jungle, *Schipp* 242; southern Mexico to Colombia. A shrub a meter high; flowers cream-colored; fruit red.

Psychotria macrophylla Ruiz & Pav. Stann Creek Valley, in forest along creek banks, *Schipp* S291; ranging southward to Peru. A shrub about a meter high, the stem usually unbranched; flowers and drupes white.

Psychotria marginata Swartz. In moist forest or thickets; southern Mexico to South America. A slender shrub 1–3 meters high.

Psychotria microdon (DC.) Urban. *Dead Man's Bones. Hueso de Finado.* Frequent in thickets; Mexico to South America and the West Indies. A stiff glabrous shrub with pale branches; flowers greenish white.

Psychotria Oerstediana Standl. El Cayo District; Sand Hill; southern Mexico to Honduras. A shrub a meter high; flowers greenish; fruit red.

Psychotria patens Swartz. In moist forest; widely distributed in tropical America. A slender glabrous shrub a meter high; corolla white; fruit blue.

Psychotria pendula (Jacq.) Urban. Camp 35, Guatemalan boundary, *Schipp* S717; Central America, West Indies, and northern South America. A small epiphytic shrub; leaves very fleshy, oblong, short-petiolate, glabrous.

Psychotria Pittieri Standl. Middlesex, in jungle, common, *Schipp* 297; southward to Colombia. A shrub a meter high.

Psychotria pleuropoda Donn. Smith. Camp 32, Guatemalan boundary, *Schipp* S637; Guatemala. A simple shrub a meter high, glabrous; stipules brown, deciduous; leaves short-petiolate, oblanceolate-linear, long-tapering to the apex.

Psychotria pubescens Swartz. Common in thickets; southern Mexico to Costa Rica and the West Indies. A shrub 1–1.5 meters high.

Psychotria sessilifolia Mart. & Gal. *Cancerillo* (Yucatan). Corozal District; southern Mexico. A shrub a meter high; fruit red.

Psychotria uliginosa Swartz. Wet forest; ranging to the Guianas and the West Indies. A shrub 1.5 meters high or less, the stem unbranched; fruit bright red. A handsome and showy plant when in fruit.

Psychotria undata Jacq. Frequent in thickets; widely distributed in tropical America. A shrub 1–1.5 meters high; fruit red.

Psychotria viridis Ruiz & Pav. Cocquericot, *Bartlett* 12038; Nicaragua to Peru; rare in Central America. A slender shrub 1.5 meters high.

RANDIA L.

Shrubs or small trees, armed with stout spines; flowers small or large, perfect or dioecious, solitary or clustered; fruit baccate, small or large, the pulp containing few or numerous large seeds.

Corolla tube 5 mm. long; fruit 1 cm. or less in diameter; leaves rounded to acutish at the apex..... *R. aculeata.*

Corolla tube 1.8–3 cm. long; fruit 2–3.5 cm. in diameter.

Corolla glabrous outside; leaves glabrous or nearly so.. *R. armata.*

Corolla pubescent outside; leaves densely pubescent.. *R. Watsoni.*

Randia aculeata L. *Pechcitam* (Maya). Occasional in thickets; widely distributed in tropical America. A dense, very spiny shrub; leaves ovate to obovate, glabrous or nearly so; flowers white.

Randia armata (Swartz) DC. *Crucetilla* (Honduras). Occasional in thickets; widely distributed in tropical America. A stiff shrub, the spines mostly in 4's at the ends of the branches; flowers greenish white, sweet-scented. The pulp of the fruit is much sought by birds, which puncture the hard shell in order to obtain it. The pulp sometimes is eaten by people, but it is black and slimy and of most repulsive appearance.

Randia Watsoni Robinson. Maskall, *Gentle* 1266; Guatemala and Mexico. A stout shrub, armed with short spines; leaves oblong to obovate, obtuse or acute; flowers white, densely clustered, the corolla 3.5–4 cm. long; fruit 3–4 cm. in diameter.

RICHARDIA L.

Richardia scabra L.

RONDELETIA L.

Shrubs or small trees; inflorescence terminal or axillary, usually paniculate; corolla funnelform or salverform, with short or long tube; fruit a small capsule, containing numerous angled or winged seeds.

Leaves white-tomentose beneath; flowers in long narrow spike-like panicles..... *R. buddleoides.*

Leaves green and glabrate beneath; flowers cymose-paniculate, the panicles broad..... *R. belizensis.*

Rondeletia belizensis Standl. Carnegie Inst. Wash. Publ. 461: 91. 1935. Type from forest on hill top, Jacinto Hills, *Schipp* 1201; Petén. A shrub or tree as much as 6 meters high; leaves ovate or oblong-ovate, 3–7 cm. long, acute or subobtuse; corolla white, pilosulous, the slender tube 7–9 mm. long; seeds winged.

Rondeletia buddleoides Benth. Camp 35, Guatemalan boundary, *Schipp* S715; southern Mexico to Panama. A slender shrub or tree, 9 meters high or less, the trunk sometimes 15 cm. in diameter; leaves elliptic to oblanceolate, acuminate, green and glabrate above, white beneath; panicles narrow, 10–15 cm. long; corolla reddish, tomentose outside, the slender tube 4–8 mm. long; seeds not winged.

SABICEA Aubl.

Sabicea villosa Roem. & Schult. Sibun River, *Gentle* 1441.

Sabicea villosa Roem. & Schult. var. **adpressa** (Wernham) Standl. In thickets. A slender vine, essentially herbaceous, but perhaps occasionally somewhat woody.

SICKINGIA Willd.

Sickingia salvadorensis (Standl.) Standl., comb. nov. *Calderonia salvadorensis* Standl. *John Crow Redwood, Redwood. Chucchemuch* (Maya). Apparently frequent; Guatemala and Salvador. A small or medium-sized tree; leaves short-petioled, oblong-obovate, acuminate, narrowly cordate at the base, pubescent or almost glabrous; flowers small, in dense terminal panicles; capsule depressed-globose, with numerous pale lenticels, containing many large compressed horizontal winged seeds. Employed locally for dyeing hammocks and other articles red. Wood yellowish when first cut, soon turning pink or red upon exposure to the air, but eventually fading; hard, heavy, strong, fine-textured, easy to work, finishes smoothly, is not very durable; not utilized locally, but suitable for articles of turnery and carving. (See *T. of T. A.*, pp. 550–552.)

SPERMACOCE L.

Spermacoce remota Lam. *S. tenuior* of many authors, not L.

Spermacoce tetraquetra A. Rich.

UNCARIA Schreb.

Uncaria tomentosa (Willd.) DC. *Uña de Guara* (Honduras). Stann Creek Valley, *Schipp;* southward to South America. A shrub, often somewhat scandent, armed with stout recurved spines; leaves oval or ovate, tomentose beneath when young but soon glabrate; flowers small, creamy white, fragrant, in dense spherical heads.

VALERIANACEAE. Valerian Family

VALERIANA L.

Valeriana scandens L. A herbaceous vine.

CUCURBITACEAE. Gourd Family

The family, as represented in British Honduras, consists wholly of herbaceous vines.

ANGURIA L.

Anguria diversifolia Cogn.

CAYAPONIA Manso

Cayaponia alata Cogn. *Akilkax* (Yucatan, Maya). Honey Camp, *Lundell.* Known also from Yucatan.

Cayaponia attenuata (Hook. & Arn.) Cogn. Stann Creek Valley.

Cayaponia microdonta Blake. *Sandía de Monte* (Honduras). Cornejo Creek; Stann Creek Valley.

CITRULLUS Forsk.

Citrullus vulgaris Schrad. *Watermelon. Sandía.* Cultivated; native of Africa.

CUCUMIS L.

Cucumis Anguria L. *Habaplat* (Yucatan, Maya). Honey Camp.

Cucumis sativus L. *Cucumber. Pepino.* Cultivated; native of southern Asia.

CUCURBITA L.

Cucurbita Pepo L. *Squash. Calabaza. Kum* (Maya). Cultivated commonly; a plant of American origin.

Cucurbita radicans Naud. Honey Camp, *Lundell* 77.

ECHINOCYSTIS Torr. & Gray

Echinocystis Coulteri (Gray) Cogn. El Cayo, *Bartlett* 12882. The species name is questionable.

ELATERIUM Jacq.

Elaterium gracile (Hook. & Arn.) Cogn. Machaca, *Schipp* S557.

GURANIA Cogn.

Gurania Makoyana (Lem.) Cogn. Near Cockscomb Mountains, *Schipp* S112.

LAGENARIA Ser.

Lagenaria siceraria (Molina) Standl. *Gourd. Lek* (Maya). Cultivated and probably escaping; perhaps native in America.

LUFFA Adans.

Luffa cylindrica (L.) Roem. *Sponge Gourd. Estropajo* (Yucatan). *Paste* (Honduras). The sponge-like interior of the large fruits is employed as a substitute for animal sponges.

MELOTHRIA L.

Melothria guadalupensis (Spreng.) Cogn. *Meloncito* (Yucatan).

Melothria pendula L. *Xtulub* (Yucatan, Maya). *Sandia silvestre* (Yucatan).

Melothria scabra Naud.

MOMORDICA L.

Momordica Charantia L. *Sorosee. Pepino de monte* (Honduras). *Yacunahax* (Yucatan, Maya). Often called Balsam Pear when cultivated in the north for its handsome fruits.

SECHIUM Swartz

Sechium edule Swartz. *Chayote. Huisquil.* Cultivated for the fruits, which, when young and tender, are cooked and eaten. The young shoots likewise are cooked and eaten, and the large fleshy roots are edible.

SICYDIUM Schlecht.

Sicydium Schiedeanum Schlecht. Caves, Stann Creek Railway, *Schipp* S180.

Sicydium tamnifolium (HBK.) Cogn. *Chacmots* (Petén, Maya).

LOBELIACEAE. Lobelia Family

ISOTOMA Lindl.

Isotoma longiflora (L.) Presl. *Lágrimas de San Diego* (Yucatan).

LOBELIA L.

Lobelia Cliffortiana L. Stann Creek.

Lobelia splendens Willd.

SPHENOCLEA Gaertn.

Sphenoclea zeylanica Gaertn.

COMPOSITAE. Sunflower Family

Herbs, shrubs, or trees; leaves opposite or alternate, simple or compound; flowers arranged in heads, the head surrounded by an involucre composed of few or numerous bracts; flowers usually of two kinds—disk flowers, in the center of the receptacle, with tubular corollas, and marginal or ray flowers having long strap-shaped corollas; fruit an achene, the calyx usually represented on its apex by pappus, this consisting of bristles, awns, or scales. Most of the plants of this great family occurring in British Honduras are herbs, and only the truly shrubby or arborescent species have been included in the following key to genera. There are no woods of importance in the family.

Leaves alternate.

Heads with rays.

Pappus of awns; rays white.....*Verbesina.*

Pappus of soft bristles; rays yellow.....*Senecio.*

Heads without rays. Pappus of bristles.

Leaves conspicuously 3-nerved. Flowers dirty white.*Baccharis.*

Leaves not 3-nerved.

Pappus bristles all of equal length.....*Pluchea.*

Pappus bristles unequal, the outer shorter.

Pubescence of the leaves of branched hairs...*Piptocarpha.*

Pubescence of simple hairs.....*Vernonia.*

Leaves opposite.

Heads with rays.

Rays white.....*Montanoa.*

Rays yellow.

Leaves covered beneath with a dense white tomentum. *Liabum.*

Leaves not white-tomentose beneath.

Pappus of the disk achenes of 2–3 awns and small scales. *Zexmenia.*

Pappus of 4 or more awns or scales.

Pappus of deciduous bristle-like awns..... *Perymenium.*

Pappus of persistent dilated awns or scales..... *Calea.*

Heads without rays.

Pappus of numerous long soft equal bristles..... *Eupatorium.*

Pappus of awns or scales or wanting.

Pappus none. Heads whitish..... *Clibadium.*

Pappus present.

Pappus of 2 awns; plants more or less scandent.... *Salmea.*

Pappus of 4 or more awns or scales; plants not scandent. *Calea.*

AGERATUM L.

Ageratum corymbosum Zucc. var. **latifolium** (DC.) Robinson. Butcher Burn, Sibun River, *Bartlett* 11396.

Ageratum ellipticum Robinson, Contr. Gray Herb. 90: 5. 1930. Type from Tower Hill, *Karling* 31; Honey Camp, *Lundell, Meyer.*

Ageratum Houstonianum Mill. El Cayo District, *Bartlett* 12098.

Ageratum maritimum HBK. f. **calvum** Robinson. Keys off the coast, *N. S. Stevenson* 152.

Ageratum Peckii Robinson, Proc. Amer. Acad. 47: 191. 1911. Type from pine ridge near Manatee Lagoon, *Peck* 80; El Cayo District, *Bartlett* 11696.

Ageratum radicans Robinson, Proc. Amer. Acad. 47: 192. 1911. Type from pond near Manatee Lagoon, *Peck* 99; Belize District, *Bartlett* 11389.

Ageratum rugosum Coulter. All Pines, *Schipp* 738.

AMBROSIA L. Ragweed

Ambrosia cumanensis HBK. Little Cocquericot, Belize River, *Lundell* 4139.

ARTEMISIA L.

Artemisia mexicana L. El Cayo, *Chanek*. Doubtless a cultivated plant.

ASTER L.

Aster bullatus Klatt. El Cayo, *Bartlett* 12093.

Aster exilis Ell. Honey Camp, *Lundell* 64.

BACCHARIS L.

Baccharis trinervis (Lam.) Pers. *Holnuxib* (Yucatan, Maya). Occasional in thickets; widely distributed in tropical America. A dense shrub, the branches recurved or often clambering, angled; leaves lanceolate to elliptic, 3-nerved, acuminate, entire, glabrous or nearly so; heads small, whitish, 4 mm. long, of separate sexes on separate plants.

BIDENS L.

Bidens pilosa L. *Mozote* (Honduras). *Kanmul* (Yucatan, Maya).

Bidens squarrosa HBK. Honey Camp and elsewhere. A climbing plant.

BORRICHIA Adans.

Borrichia arborescens (L.) DC. All Pines, mangrove swamp, *Schipp* 575. Herbaceous or somewhat shrubby.

CALEA L.

Shrubs or rarely herbs; leaves opposite; heads small or large, with or without rays, usually in cymes; bracts in several series, dry or the outer herbaceous; achenes subterete or 4–5-angled, the persistent pappus of 4–20, usually equal, chaffy scales or awns, rarely wanting.

Heads large, 1 cm. broad or larger..... *C. longipedicellata.*

Heads small, much less than 1 cm. broad.

Pappus shorter than the achene..... *C. Zacatechichi.*

Pappus equaling or longer than the achene.

Heads with rays..... *C. urticifolia.*

Heads without rays.

Leaves ovate..... *C. Peckii.*

Leaves linear-lanceolate..... *C. fluviatilis.*

Calea fluviatilis Blake, Journ. Wash. Acad. 22: 385. 1932. Type from Río Privación, El Cayo District, *Bartlett* 11790. A low herb.

Calea longipedicellata Rob. & Greenm. All Pines, secondary forest; Mountain Pine Ridge; southern Mexico and Guatemala. A weak shrub 4.5 meters high; heads orange-yellow, without rays.

Calea Peckii Robinson, Proc. Amer. Acad. 44: 624. 1909. Type, *Peck* 64, without definite locality; Stann Creek Valley, Tower Hill Estate, Honey Camp. A shrub 2 meters high or less with small rough ovate leaves.

Calea urticifolia (Mill.) DC. *Xicin* (Yucatan, Maya). All Pines, El Cayo, and elsewhere, in secondary forest; Mexico and Central America. A shrub 1–2 meters high; leaves small, ovate, rough above, pubescent beneath; heads small, yellow.

Calea Zacatechichi Schlecht. *Tzicin* (Yucatan, Maya). In thickets; Mexico and Guatemala. A low shrub; leaves short-stalked, ovate, coarsely toothed, pubescent beneath; heads small, yellow.

CHAPTALIA Vent.

Chaptalia nutans (L.) Polak.

CIRSIUM Hill. Thistle

Cirsium mexicanum DC. *Cardo* (Yucatan). *Omil* (Yucatan, Maya).

CLIBADIUM Allem.

Shrubs; leaves opposite, toothed; heads small, whitish, disk-like, in panicled cymes; achenes obcompressed, without pappus.

Heads few, with numerous achenes.....*C. polygynum.*

Heads very numerous, with only 3–6 achenes.....*C. arboreum.*

Clibadium arboreum Donn. Smith. Big Creek and elsewhere; southern Mexico and Guatemala. A shrub 2 meters high or less; leaves long-stalked, large, broadly ovate, acute or acuminate, coarsely toothed, densely soft-pubescent beneath; heads 5–6 mm. high.

Clibadium polygynum Blake. Stann Creek Valley, open places along river bank, *Schipp* 972; southward to Nicaragua. A shrub 2.5 meters high with harsh pubescence; leaves slender-stalked, lanceolate to ovate, long-acuminate.

COSMOS Cav.

Cosmos caudatus HBK. *Chactsul* (Yucatan, Maya).

ECLIPTA L.

Eclipta alba (L.) Hassk.

ELEPHANTOPUS L.

Elephantopus hypomalacus Blake. All Pines.

Elephantopus mollis HBK. Little Mountain Pine Ridge, *Bartlett* 11871.

ELVIRA Cass.

Elvira biflora (L.) Cass.

EMILIA Cass.

Emilia sagittata (Vahl) DC. All Pines, *Schipp.*

Emilia sonchifolia (L.) DC.

ERECHTITES Raf.

Erechtites hieraciifolia (L.) Raf.

ERIGERON L.

Erigeron bonariensis L.

Erigeron canadensis L. Reported by Lundell.

Erigeron pusillus Nutt. New Town, *Schipp.*

Erigeron spathulatus Vahl.

EUPATORIUM L.

Herbs, shrubs, or small trees; leaves chiefly opposite; heads small or rather large, without rays, white to purple or bluish; achenes 5-ribbed or 5-angled, the pappus of numerous slender soft bristles.

Flower heads cylindric, mostly twice as long as thick.

Leaves pinnate-nerved.....*E. Oerstedianum.*

Leaves 3–5-nerved.

Heads 15–25-flowered.....*E. odoratum.*

Heads 4–6-flowered.....*E. campechense.*

Flower heads campanulate or turbinate.

Herbs; leaves densely pubescent or almost glabrous beneath.

Leaves long-attenuate at the base.....*E. Blakei.*

Leaves cordate or rounded at the base.

Heads in long narrow panicles.....*E. solidaginoides.*

Heads in broad or small and dense cymes.

Heads in large broad cymes; leaves very large, mostly more than 10 cm. wide; flowers white.....*E. macrophyllum.*

Heads in small dense rounded cymes; leaves small, less than 5 cm. wide; flowers purple.....*E. pycnocephalum.*

Shrubs or trees; leaves glabrous or practically so.

Flower heads in small, very dense, rounded cymes; leaves conspicuously triplinerved.....*E. albicaule.*

Flower heads in large panicles; leaves not evidently triplinerved.

Leaf blades mostly truncate or obtuse at the base, ovate or deltoid-ovate.....*E. morifolium.*

Leaf blades acute at the base, mostly oblong or obovate-oblong. *E. Pittieri.*

Eupatorium albicaule Schultz Bip. *Old Woman's Walking-stick. Soscha, Xoltexnuc* (Maya). *Tiñe-cordel* (Honduras). Occasional in thickets; Mexico to Honduras. An almost glabrous shrub or small tree 6 meters high or less; leaves short-petioled, lanceolate to oblong-ovate, small, long-acuminate, serrate; heads white, 7–8-flowered. In Honduras the plant is employed for imparting a green dye to twine, cloth, and other articles.

Eupatorium Blakei Robinson. El Cayo, *Bartlett* 11463.

Eupatorium campechense Robinson. Honey Camp, *Lundell;* Campeche. An almost glabrous shrub; leaves short-stalked, lanceolate to ovate, undulate-toothed, triplinerved, glabrous or nearly so; heads in cymes, the cymes forming large panicles.

Eupatorium macrophyllum L. A frequent weed.

Eupatorium morifolium Mill. *Cerbatana* (Honduras). Stann Creek Valley, *Schipp;* widely distributed in tropical America. A shrub or small tree as much as 4.5 meters high, often forming dense clumps or thickets, the stems hollow, simple or branched; leaves large, crenate-serrate; heads small, 6–13-flowered, white.

Eupatorium odoratum L. *Crucito* (Honduras). *Tokaban* (Yucatan, Maya). Common in thickets; generally distributed in tropical America. A shrub, often with long, recurved or clambering branches; leaves rhombic-ovate or deltoid, acute or acuminate, coarsely toothed or sometimes entire; heads lavender or almost white, 10–12 mm. long, in small corymbs. One of the most common weedy shrubs of Central America, springing up abundantly in cut-over or abandoned land.

Eupatorium Oerstedianum Benth. Mountain Pine Ridge, *Bartlett* 11607; southward to Costa Rica. A shrub 2–3.5 meters high; leaves short-stalked, narrowly lance-oblong, long-attenuate, thick and firm, glabrate; heads small, white, in large dense terminal cymes.

Eupatorium Pittieri Klatt. Big Creek; Punta Gorda; southward to Panama. A shrub or small tree, as much as 7 meters high, with trunk diameter of 12 cm.; leaves large, slender-stalked, acute or acuminate, coarsely toothed, penninerved; heads small, white.

Eupatorium pycnocephalum Less.

Eupatorium solidaginoides HBK. El Cayo, *Bartlett* 11462.

FLAVERIA Juss.

Flaveria trinervia (Spreng.) Mohr. Corozal District.

GNAPHALIUM L.

Gnaphalium attenuatum DC. All Pines, *Schipp* 572.

GOLDMANELLA Greenm.

Goldmanella sarmentosa Greenm. Honey Camp, *Lundell* 17; Mullins River Road, *Schipp* 867; Campeche.

HARLEYA Blake

Harleya oxylepis (Benth.) Blake.

LACTUCA L.

Lactuca sativa L. *Lettuce. Lechuga.* Cultivated; native of the Old World.

LIABUM Adans.

Liabum dimidium Blake. *Barracouta Tietie.* Toledo; Stann Creek Valley; Petén. A large woody vine, probably sometimes epiphytic; leaves large, ovate or rounded-ovate, almost entire, green above, densely white-tomentose beneath; heads small, yellow, in large panicles.

MELANTHERA Rohr

Melanthera aspera (Jacq.) Steud.

Melanthera parviceps Blake, Journ. Wash. Acad. 22: 384. 1932. Type from Little Mountain Pine Ridge, El Cayo District, *Bartlett* 11882.

MIKANIA Willd.

The plants of this genus are vines, chiefly herbaceous but often somewhat woody.

Mikania boliviensis Lingelsh. Sittee River, *Schipp.*

Mikania cordifolia (L. f.) Willd.

Mikania Houstoniana (L.) Robinson.

Mikania leiostachya Benth.

Mikania micrantha HBK.

Mikania olivacea Klatt.

MILLERIA L.

Milleria quinqueflora L.

MONTANOA Cerv.

Montanoa pauciflora Klatt. Stann Creek Valley; El Cayo; southern Mexico and Central America. A shrub 2 meters high, often climbing; leaves opposite, ovate, toothed, rough, thin; heads medium-sized, with large white rays; chaff of the disk becoming greatly enlarged and scarious in fruit; achenes without pappus. A showy and handsome plant when in flower.

NEUROLAENA R. Br.

Neurolaena lobata (L.) R. Br. *Mano de Lagarto. Tabaquillo* (Guatemala). A large coarse herb; a common weed, used locally as a remedy for stomach affections.

NOTOPTERA Urban

Notoptera scabridula Blake. El Cayo District, *Bartlett* 11541; southern Mexico to Honduras. Plants more or less shrubby.

ORTHOPAPPUS Gleason

Orthopappus angustifolius (Swartz) Gleason. All Pines, *Schipp.*

PARTHENIUM L.

Parthenium Hysterophorus L. *Altamisa* (Yucatan). *Hauay* (Yucatan, Maya). Honey Camp.

PECTIS L.

Pectis prostrata Cav. Stann Creek, *Schipp.*

Pectis Schottii (Fernald) Millsp. Seine Bight, *Schipp;* Yucatan.

PERYMENIUM Schrad.

Perymenium Peckii Robinson, Proc. Amer. Acad. 47: 211. 1911. Type, *Peck* 824, without definite locality; Belize District, *Bartlett* 11221. A subscandent shrub 3–9 meters long; leaves opposite, lanceolate, acuminate, remotely toothed, petiolate, softly pubescent beneath; heads yellow, with rays, 6 mm. high, the bracts obtuse.

PIPTOCARPHA R. Br.

Piptocarpha chontalensis Baker. Big Creek, *Schipp* 138; southward to Panama. A shrub, more or less scandent, as much as 6 meters long; leaves alternate, short-stalked, ovate or elliptic, acuminate, almost entire, densely and minutely tomentose beneath; flower heads small, clustered in the leaf axils, white, without rays; pappus of 2 series of slender bristles.

PLUCHEA Cass.

Pluchea odorata (L.) Cass. *Santa María* (Yucatan). *Chalche* (Yucatan, Maya). Occasional in thickets; widely distributed in tropical America. A stout grayish-tomentose shrub; leaves elliptic to oblong-ovate, alternate, entire or nearly so; heads 6–7 mm. high, pink; pappus of numerous soft bristles.

Pluchea purpurascens (Swartz) DC. A coarse herb.

POLYMNIA L.

Polymnia maculata Cav.

PSEUDELEPHANTOPUS Rohr

Pseudelephantopus spicatus (Juss.) Rohr.

SALMEA DC.

Salmea scandens (L.) DC. *Iklab* (Maya). El Cayo District; widely distributed in tropical America. A large, more or less scandent shrub; leaves opposite, short-stalked, ovate or oblong-ovate, thick, remotely toothed or almost entire, glabrous or nearly so; heads 5–7 mm. high, whitish, without rays; achenes strongly compressed, ciliate, the pappus of 2 awns. Used in British Honduras as a fish poison.

SCHISTOCARPHA Less.

Schistocarpha oppositifolia (Kuntze) Rydb.

SENECIO L.

Senecio cobanensis Coulter. Pine Peak, *D. Stevenson;* Guatemala and Honduras. A shrub or small tree, almost glabrous; leaves alternate; somewhat fleshy, oblong or oblanceolate, stalked, entire or nearly so; heads medium-sized, the bracts equal, linear, in a single series, a few small ones present at the base.

SPARGANOPHORUS Crantz

Sparganophorus Vaillantii Crantz.

SPILANTHES Jacq.

Spilanthes americana (Mutis) Hieron.

SPIRACANTHA HBK.

Spiracantha cornifolia HBK. Calcutta, *Gentle* 5000.

SYNEDRELLA Gaertn.

Synedrella nodiflora (L.) Gaertn.

TITHONIA Desf.

Tithonia diversifolia (Hemsl.) Gray. Columbia, *Schipp* S690.

Tithonia Pittieri (Greenm.) Blake.

Tithonia rotundifolia (Mill.) Blake. *Zuum* (Yucatan, Maya). El Cayo, *Bartlett* 12099.

TRICHOSPIRA HBK.

Trichospira menthoides HBK. Belize River, *Lundell* 4082.

VERBESINA L.

Verbesina lanata Rob. & Greenm. Near Middlesex, mountain forest, 480 meters, *Schipp* 479; Guatemala. A tree 11 meters high, the trunk 20 cm. in diameter; leaves alternate, very large, short-stalked, oblong-lanceolate, almost entire, acuminate, pilose, especially on the upper surface; heads rather large, somewhat tomentose, with showy white rays.

Verbesina myriocephala Schultz Bip. *Tabaquillo* (Honduras). Honey Camp, *Lundell.* A tall coarse herb with pinnatifid leaves and white heads.

VERNONIA Schreb.

Herbs, shrubs, or trees; leaves alternate, usually toothed; heads small or medium-sized, without rays; involucre campanulate, the

small bracts numerous, graduated; achenes 4–10-ribbed, the pappus of a series of small outer scales and a series of long stiff bristles.

Heads subtended by large leaf-like bracts.

Inner bracts long-tapering; plants herbaceous.

Leaves 8–12 cm. long.....*V. argyropappa.*

Leaves 6 cm. long or less.....*V. remotiflora.*

Inner bracts obtuse; shrub.....*V. tortuosa.*

Heads not leafy-bracted.

Bracts very acute; branches of the inflorescence long and slender, recurved.....*V. canescens.*

Bracts obtuse or acutish; branches of the inflorescence short and stiff.

Heads 11-flowered.....*V. Aschenborniana.*

Heads 18–21-flowered.....*V. patens.*

Vernonia argyropappa Buek. Mullins River Road; east of Mount Polo, Belize District.

Vernonia Aschenborniana Schauer. Mullins River Road, edge of forest, *Schipp* 31; Mexico to Nicaragua. A stiff shrub 2.5 meters high; leaves elliptic to narrowly lance-oblong, pubescent beneath; involucre 3 mm. high; flowers pale pink.

Vernonia canescens HBK. Stann Creek; widely distributed in tropical America. A slender shrub about a meter high; leaves ovate to oblong, sparsely or densely silky-hairy beneath, acuminate; heads 3.5–5 mm. high, pale pink.

Vernonia cinerea L. A low herb, naturalized from the Old World tropics; reported by Lundell.

Vernonia patens HBK. Occasional in thickets; Mexico to northern South America. A stout shrub 2 meters high or less; leaves elliptic to oblong, pubescent beneath, thick; heads white, 4 mm. high.

Vernonia remotiflora Rich. El Cayo District, *Bartlett* 11530.

Vernonia tortuosa (L.) Blake. In thickets; Mexico and Central America. A shrub 3 meters high or less, the branches often recurved; leaves oblong to ovate, pubescent, thick; heads 1 cm. high, white.

VIGUIERA HBK.

Viguiera dentata (Cav.) Spreng. var. **helianthoides** (HBK.) Blake. Corozal-Orange Walk Road, *Gentle* 181.

WEDELIA Jacq.

Wedelia acapulcensis HBK. Reported by Lundell.

Wedelia parviceps Blake.

Wedelia trilobata (L.) Hitchc.

ZEXMENIA Llave

Shrubs or herbs; leaves opposite, petioled, toothed; heads in umbels or panicles, yellow, with showy rays; achenes compressed, sometimes winged, the pappus of awns and scales, or sometimes reduced to a crown.

Heads in umbels; leaves glabrate beneath.....*Z. frutescens.*

Heads in panicles; leaves densely pubescent beneath.....*Z. serrata.*

Zexmenia frutescens (Mill.) Blake. *Zactah* (Yucatan, Maya). In thickets; southern Mexico to northern South America. A shrub 3 meters high, often somewhat scandent; leaves ovate or lanceolate, rough on the upper surface; heads 7–12 mm. high, the bracts obtuse.

Zexmenia serrata Llave. In thickets; Mexico and Guatemala. Leaves ovate to lance-oblong, acute or acuminate; heads 5–7 mm. high.

ZINNIA L.

Zinnia elegans Jacq. *Berjima.* Cultivated and naturalized; native of Mexico.

ADDITIONS

Too late for inclusion in the body of this report, there have been detected various new or otherwise interesting plants that deserve inclusion in the Flora of British Honduras, and descriptions or mention of these are found upon the following pages. It is to be regretted that certain publications cited in the bibliography were not available when the manuscript of the flora was prepared for publication, since certain data contained in them could have been used to advantage in the preceding pages.

POLYPODIACEAE

Dryopteris Schippii Weatherby, Amer. Fern Journ. 25: 52. 1935. Type from Machaca Creek, *Schipp* S782.

Polypodium Harrisii Jenman. Guatemalan boundary, *Schipp* S801 in part.

Polypodium mollissimum Fée. Collected by Schipp.

PALMAE

Chamaedorea Karwinskyana Wendl. Reported recently by Burret from Camp 36 on the Guatemalan boundary, 900 meters, *Schipp* 894; also in Guatemala and southern Mexico. Stems 2.5–4.5 meters high and 2.5 cm. thick.

Paurotis Schippii Burret, Notizbl. Bot. Gart. Berlin 12: 303. 1935. Type from "Pojktuun Trail," 780 meters, in swamp forest, *Schipp* 893. Closely related to the palm listed in the treatment of the family as *Acoelorrhaphe Wrightii*, but distinguished by having unarmed petioles. Burret now uses the generic name *Paurotis* O. F. Cook in place of *Acoelorrhaphe*.

PIPERACEAE

The descriptions of the following new species are inserted here at the request of Mr. C. L. Lundell. A few of the species are plants of neighboring Guatemala which probably will be found to occur also in British Honduras.

Arctottonia sempervirens Trelease, sp. nov.—Frutex glaber 4–5-metralis, internodiis ramorum floriferorum gracilibus et vulgo brevibus; folia elliptica, subovata vel sublanceolata acuminata basi acuta, 6–8 cm. longa 3–4.5 cm. lata, 3- vel vulgo 5-nervia, nervis submarginalibus magis obscuris, coriacea, leviter revoluta, lucida, supra intense viridia, subtus olivacea; petiolus 5 mm. longus; spicae 15 mm. longae 5 mm. crassae, pedunculo vix 10 mm. longo

1-bracteato, pedicello flore paullo longiore.—Guatemala: Uaxactún, Petén, April, 1931, *H. H. Bartlett* 12563 (type in herb. Univ. Michigan); also Nos. 12683, 12326.

Arctottonia tuxpenyana Trelease, sp. nov.—Frutex glaber divaricato-ramosus, internodiis superioribus brevibus gracilibus; folia ovato-lanceolata acuminata, basi rotundata et vulgo obliqua, 7–9 cm. longa 3–4 cm. lata, 5-nervia, rugosissima; petiolus 3 mm. longus; spicae in statu fructifero 20 mm. longae et 6 mm. crassae, pedunculo circa 5 mm. longo; baccae globoso-ellipsoideae breviter pedicellatae.—Mexico: Tuxpeña, Campeche, *C. L. Lundell* 1300 (type in herb. Univ. Michigan).

Peperomia Lundellii Trelease, sp. nov.—Herba staturae mediae epiphytica, caulibus 2 mm. crassis in statu sicco valde angulatis; folia opposita vel ternata subrhombeo-elliptica obtuse acuminata, basi acuta, 3–6 mm. longa 2–4 cm. lata, 3-nervia, petiolo 5 mm. longo; spicae terminales 20 mm. longae 2 mm. crassae, pedunculo denique 4 mm. longo, bracteis rotundato-peltatis.—British Honduras: Honey Camp, Orange Walk District, November, 1928, *C. L. Lundell* 96a (Herb. Field Mus. No. 597,985, type).

Peperomia pololensis Trelease, sp. nov.—Herba staturae mediae repenti-assurgens brunneo-punctata petiolis et lineis e petiolis decurrentibus exceptis glabra, caule 1–2 mm. crasso; folia alterna lanceolata utrinque sensim acuta, 5–6 cm. longa 0.6–2 cm. lata, trinervia, nervis basi plus minusve confluentibus, petiolo 5 mm. longo subdecurrente; spicae vix 40 mm. longae et 2 mm. crassae laxiflorae, pedunculo 5 mm. longo, bracteis rotundato-peltatis; baccae subglobosae mucronatae stigmate obliquo.—Guatemala: Monte Polol, Petén, *C. L. Lundell* 3040 (type in herb. Univ. Michigan); La Libertad, *Lundell* 3100, 3102; Monte Santa Teresa, *Lundell* 2724.—British Honduras: Belize River, *Lundell* 3830.

Peperomia praetenuis Trelease, sp. nov.—Herba diminutiva glabra etiam in statu fructifero vix 4 cm. alta; folia alterna triangulari-ovata subacuta basi truncato-cordata 5–10 mm. lata et aequilonga, 3-nervia, venulosa, in statu sicco tenerrima, petiolo vix 3 mm. superante; spicae terminales laxiflorae, 10 mm. longae 1 mm. crassae, pedunculo vix 5 mm. longo, bracteis rotundato-peltatis; baccae subellipsoideae plus minusve striatae carnosae, stigmate apicali.—British Honduras: Belize, *C. L. Lundell* 1929 (type in herb. Univ. Michigan).

Piper atlantidanum Trelease, var. **sibunense** Trelease, var. nov.—Frutex primum cinereo-pubescens, foliis cito glabrescentibus, internodiis superioribus gracilibus elongatis laxe hirtellis; folia ovata acuminata, basi cordulata vel subcordulata uno latere brevioria, 21 cm. longa 13 cm. lata, e dimidio inferiore penninervia, nervis pallidis 6×2, subtus pallidiora praesertim ad nervos molliter pubescentia, in statu sicco tenuia pellucido-punctata, petiolo 20–30+5 mm. longo; spicae 45 mm. longae 2 mm. vel in statu fructifero 3 mm. crassae, pedunculo 10 mm. longo, bracteis rotundato-subpeltatis.—

British Honduras: Craig Point, Sibun River, *Percy H. Gentle* 1381 (type in herb. Univ. Michigan).

Piper cayoense Trelease, sp. nov.—Frutex 3-metralis, internodiis superioribus brevibus gracilibus hirsutis; folia lanceolato-ovata acuminata basi inaequaliter cordulata, 6.5–15 cm. longa 5–12 cm. lata, e dimidio inferiore penninervia, nervis 5×2, rugosa, supra granuloso-asperata, nervis subtus patenti-subhirsutis, petiolo 10 mm. longo hirsuto; spicae 50–60 mm. longae 3 mm. crassae, pedunculo 5 mm. longo hirsuto, bracteis rotundato-subpeltatis ciliolatis.—British Honduras: San Antonio, El Cayo, *H. H. Bartlett* 13070 (type in herb. Univ. Michigan).

Piper Chanekii Trelease, sp. nov.—Frutex?, internodiis superioribus breviusculis gracilibus hispidis; folia subelliptica acuminata, basi uno latere breviore rotundata, 13–14 cm. longa 6.5 cm. lata, e dimidio inferiore penninervia, nervis circa 5+6, supra molliter pilosa serius lepidota, subtus pallidiora sparse pilosa, nervis adpresso-pilosis, rugosa, petiolo circa 10+2 mm. longo hispido; spicae 80–100 mm. longae 4 mm. crassae, pedunculo 5–10 mm. longo hispido, bracteis rotundato-subpeltatis ciliatis; stigmata 3 sessilia.—British Honduras: El Cayo, *Mercedes Chanek* 10 (type in herb. Univ. Michigan).

Piper cocquericotense Trelease, sp. nov.—Frutex?, ramis scabro-hispidis, internodiis breviusculis gracilibus; folia subelliptica acute acuminata, basi inaequilatera latere breviore subacuto, 13–19 cm. longa 6.5–8.5 cm. lata, e dimidio inferiore penninervia, nervis circa 5+6, supra breviter scabrida, subtus pallidiora hispida, petiolo circa 7+3 mm. longo hispido; spicae 80 mm. longae 3 mm. crassae, pedunculo 5–10 mm. longo scabro, bracteis rotundato-subpeltatis ciliatis.—British Honduras: Little Cocquericot, Belize River, *C. L. Lundell* 3829 (type in herb. Univ. Michigan).

Piper dimorphophyllum Trelease, sp. nov.—Frutex glabrescens, internodiis superioribus gracilibus modice elongatis primum sparse pilosis; folia subelliptica acuminata fere aequaliter subcordulata coeruleo-viridia 7–13 cm. longa 3.5–5 cm. lata, interdum supra laete viridia basi uno latere paullo longiora atque 28 cm. longa et 10 cm. lata, e dimidio inferiore penninervia, nervis 4–5×2, petiolo 10 mm. longo; spicae 60 cm. longae, 2 mm. crassae, pallidae, pedunculo 10 mm. longo, bracteis rotundato-subpeltatis, centro fusco.—British Honduras: Craig Point, Sibun River, *Percy H. Gentle* 1387 (type in herb. Univ. Michigan).

Piper Gentlei Trelease, sp. nov.—Frutex?, primum obscure molliter pubescens, serius glabrescens; folia elliptica acuminata, basi inaequaliter breviter cordulata, 12–20 cm. longa 6–10 cm. lata, e ⅔ inferiore penninervia, nervis 4–5×2, supra intense viridia glabra lucida, nervis subtus minute molliter pubescentibus, petiolo 5–10 mm. longo vix alato plus minusve molliter pubescente; spicae 60 cm. longae 6 mm. crassae mucronulatae ferrugineae, pedunculo vix 5 mm. longo, bracteis triangulari-subpeltatis ciliatis; baccae globosae, stigmatibus 3 latis sessilibus.—British Honduras: San

Andrés, Corozal District, *Percy H. Gentle* 1077 (type in herb. Univ. Michigan).

Piper kantetulense Trelease, sp. nov.—Frutex?, internodiis superioribus brevibus gracilibus primum cinereo-subvillosis glabrescentibus; folia lanceolato-elliptica vel ovato-elliptica acuminata, basi rotundata uno latere paullo breviore, 13–15 cm. longa 5–7.5 cm. lata, e dimidio inferiore penninervia, nervis circa 5×2, plus minusve rugosa, supra lucida glabra, subtus opaca cinereo-pubescentia, petiolo vix 5+2 mm. longo cinereo-hirsuto; spicae 60 cm. longae et 4 mm. crassae vel ultra, pedunculo vix 5 mm. longo velutino; bracteae magnae pallidae rotundato-subpeltatae lacerae; stigmata 3 sessilia.—Guatemala: Kantetul, Petén, *C. L. Lundell* 3173 (type in herb. Univ. Michigan).

Piper kantetulense var. **Gentlei** Trelease, var. nov.—Folia minora, 12 cm. longa 5 cm. lata; spicae 40 mm. longae 4 mm. crassae, bracteis pallidis, centro fusco; petiolus vix 5 mm. longus.—British Honduras: Prospect, Northern River, *Percy H. Gentle* 947 (type in herb. Univ. Michigan).

Piper Lundellii Trelease, sp. nov.—Frutex? glaber, internodiis superioribus gracilibus breviusculis nigrescentibus; folia rotundato-elliptica vel rotundato-ovata subabrupte breviacuminata, basi typice rotundata conspicue unguiculata, 8–10 cm. longa 5–7.5 cm. lata, 7-nervia, nervis exterioribus marginalibus et magis obscuris, petiolo 5 mm. longo; spicae filiformes 50 mm. longae, pedunculo 5 mm. longo.—British Honduras: Honey Camp, *C. L. Lundell* 570 (Herb. Field Mus. No. 604,418, type).

Piper nitidulifolium Trelease, sp. nov.—Frutex?, statu sicco brunnescens, internodiis superioribus brevibus gracilibus crispo-pilosis glabrescentibus; folia elliptico-lanceolata acuminata, basi angustata saltem uno latere cordulata vel rotundata, 11–16 cm. longa 4.5–6.5 cm. lata, e dimidio inferiore penninervia, nervis 4–5×2, in statu sicco tenuia, supra lucida, nervis subtus plus minusve molliter pubescentibus, petiolo vix 7+3 mm. longo sparse piloso basi alato; spicae oppositifoliae vix 60 mm. longae et 3 mm. crassae mucronatae, pedunculo 5 mm. longo glabrato, bracteis rotundato-subpeltatis; baccae depresso-globosae; stigmata 3 linearia sessilia.—British Honduras: Tower Hill, *J. S. Karling* 26 (Herb. Field Mus. No. 658,990, type).

Piper sibunense Trelease, sp. nov.—Frutex?, internodiis superioribus breviusculis gracilibus cinereo-tomentosis, serius elongatis glabrescentibus minute scabridulis; folia lanceolata vel elliptica acuminata basi inaequaliter obtusa, vel in foliis longioribus basi subacuta, 12–15 cm. longa 5–5.5 cm. lata, e dimidio inferiore penninervia, nervis 5×2, supra rigide pubescentia scabrida, subtus cinereo-tomentulosa; spicae 60 mm. longae 3 mm. crassae, pedunculo 5 mm. longo subtomentuloso.—British Honduras: Gracie Rock, Sibun River, *Percy H. Gentle* 1562 (type in herb. Univ. Michigan).

Pothomorphe peltata (L.) Miq. var. **hypoleuca** Trelease, var. nov.—Glaber; folia suborbicularia abrupte breviacuminata,

basi breviter retusa, 24 cm. lata, supra intense viridia, subtus leviter glauca, nervis venisque fere albis plus minusve granulosis, petiolo gracili 24 cm. longo 5 cm. supra basin laminae peltatim inserto, tertio inferiore alato, glauco; pedunculus gracilis 4 cm. longus; spicae 100 mm. longae 3 mm. crassae albae, pedunculis secundariis 10 mm. longis.—British Honduras: Craig Point, Sibun River, *Percy H. Gentle* 1400 (type in herb. Univ. Michigan).

ULMACEAE

Celtis Schippii Standley, sp. nov.—Arbor 15-metralis glabra, trunco 25 cm. diam., ramulis gracilibus rimosis dense minute lenticellatis; folia mediocria breviter petiolata subcoriacea, petiolo gracili 5–8 mm. longo; lamina oblonga vel anguste elliptico-oblonga 8–11 cm. longa 3.5–4.5 cm. lata anguste breviter acuminata, basi obtusa vel subacuta atque plus minusve obliqua, supra lucida nervis venulisque prominentibus, subtus subconcolor, basi trinervia, nervis ut venulis valde prominentibus, venulis arcte reticulatis; flores axillares solitarii, pedicellis in statu fructifero crassis usque ad 7 mm. longis; sepala persistentia subrotundata vix ultra 1 mm. longa apice late rotundata ciliata; drupa ellipsoidea glabra circa 1.5 cm. longa et 1 cm. lata basi angustata.—British Honduras: Temash River, in primary forest, alt. 45 meters, March 25, 1935, *W. A. Schipp* 1322 (Herb. Field Mus. No. 782,562, type).

A member of the subgenus *Momisia*.

LORANTHACEAE

The following species are published here at the request of Mr. C. L. Lundell.

Phoradendron belizense Trelease, sp. nov.—*Aequitoriales–Quadrangulares.* Copiose ramosus vel pseudo-dichotomus glaber laevis, cataphyllis basalibus, internodiis 20–40 mm. longis 2–4 mm. crassis acute quadrangularibus supra plus minusve compressis; cataphylla patentia albomarginata; folia lanceolata vel anguste obovata obtusa vel subacuta, 30–35 mm. longa 7–12 mm. lata, basi cuneata, subsessilia, obscure basinervia, supra plus minusve lucida; spicae vulgo solitariae et axillares 20–35 mm. longae, nodis circa 3 oblongis 12-floris, floribus 4-seriatis, pedunculo brevissimo; bacca rubra globosa laevis, sepalis arcte inflexis.—British Honduras: Belize, *C. L. Lundell* 1820 (type in herb. Univ. Michigan).

Phoradendron cayanum Trelease, sp. nov.—*Aequitoriales–Quadrangulares.* Vix dichotomus, androgynus?, glaber, ramis acute quadrangularibus, cataphyllis omnibus basalibus, internodiis gracilibus elongatis; cataphylla subacuta; folia elliptico-obovata obtusa; basi sessili cuneata, basinervia; spicae vulgo solitariae et axillares graciles elongatae, 40–60 mm. longae, nodis circa 5 elongatis, floribus 12 et ultra 4- et 2-seriatis, pedunculo 5–10 mm. longo; baccae flavae subglobosae, petalis inflexis.—British Honduras: El Cayo, *H. H. Bartlett* 11997 (type in herb. Univ. Michigan).

Phoradendron cocquericotanum Trelease, sp. nov.—*Aequitoriales–Quadrangulares.* Vix dichotomus, androgynus?, ramis acute quadrangularibus, cataphyllis basalibus, internodiis glabris breviusculis validiusculis; cataphylla obtusiuscula; folia suboblonga vel elliptica obtusa 3–6 cm. longa 2 cm. lata, basi sessili cuneata, opaca, basinervia; spicae ad axillas plus minusve fasciculatae graciles vix 40 mm. longae, nodis circa 4 brevibus, floribus 12 et ultra 4- vel 2-seriatis, pedunculo brevi; baccae flavae globosae, petalis inflexis.—British Honduras: Cocquericot, March, 1931, *H. H. Bartlett* 12073 (type in herb. Univ. Michigan).

Phoradendron Gentlei Trelease, sp. nov.—*Aequitoriales–Heydeanae.* Plus minusve pseudodichotomus, dioicus?, cataphyllis basalibus, internodiis gracilibus infra nodos subdilatatis; folia ovata obtusa basi acuta 8 cm. longa 4 cm. lata pinnatim paucinervia, petiolo 5 mm. longo; spicae solitariae fere 100 mm. longae, rhachi gracili, nodis circa 8 paucifloris, floribus 2- vel 4-seriatis; baccae immaturae ellipsoideae 5 mm. longae 4 mm. latae, sepalis inflexis.—British Honduras: Corozal District, *Percy H. Gentle* 505 (type in herb. Univ. Michigan).

Phoradendron manatense Trelease, sp. nov.—*Aequitoriales–Rubrae.* Vix dichotomus, androgynus?, cataphyllis basalibus, internodiis brevibus crassiusculis obscure subpapillatis quadrangularibus; folia elliptica vel subobovata obtusa 3–4 cm. longa 1–2 cm. lata basi cuneata, breviter petiolata, lucida, minute rugulosa; spicae solitariae?, breves, nodis circa 3 paucifloris, pedunculo brevissimo; baccae ut videtur rubrae ellipsoideae, sepalis apertis.—British Honduras: Cornhouse Creek, Manatee River, January, 1931, *H. H. Bartlett* 11304 (type in herb. Univ. Michigan).

LEGUMINOSAE

Chaetocalyx belizensis Standley, sp. nov.—Herba volubilis usque ad 7 m. longa, caulibus gracillimis sparsissime incurvo-pilosulis vel fere glabris et hinc inde pilis lutescentibus basi paullo dilatatis setulosis; stipulae 5 mm. longae virides lineari-triangulares attenuatae setuloso-ciliatae; folia pinnata 8–10 cm. longa petiolata, rhachi gracillima praesertim ad nodos setosa; foliola vulgo 9 brevissime petiolulata membranacea obovato-ovalia 1.5–2 cm. longa 8–13 mm. lata apice late rotundata vel subtruncata et mucronata, basi obtusa, utrinque nigro-puncticulata atque sparse minutissime subadpresso-pilosula, supra intense viridia, subtus pallida; flores pauci ad axillas fasciculati, pedicellis ad 6 mm. longis gracilibus glabris vel sparse setosis; calycis tubus tubuloso-campanulatus 5–6 mm. longus basi obtusus, sparse pilis longis flavescentibus patentibus setosus, lobis 3 mm. longis e basi triangulari filiformi-attenuatis; petala lutea glabra, vexillo 2 cm. longo, limbo 12 mm. lato apice profunde exciso; legumen lineare torulosum circa 13 cm. longum et 1.5 mm. latum striatum, articulis numerosis minute puberulis.—British Honduras: Temash River, on river bank, climbing over *Gynerium*, alt. 30

meters, February 18, 1935, *W. A. Schipp* 1330 (Herb. Field Mus. No. 782,452, type).

Similar in most respects to *C. vestita* Standl., of Yucatan, in which the standard is densely pubescent on its outer surface, and the pubescence of the foliage is quite different in character.

SAPINDACEAE

Cupania Schippii Standley, sp. nov.—Arbor 11-metralis, trunco 25 cm. diam., ramulis subteretibus sulcatis densissime tomento ferrugineo velutino-tomentosis; folia magna circa 45 cm. longa et ultra longe petiolata, rhachi crassa dense villosulo-tomentosa; foliola 10 breviter crasse petiolulata coriacea oblonga 8–15 cm. longa 4.5–6.5 cm. lata apice rotundata vel subtruncata interdum subemarginata basi oblique rotundata, supra in sicco cinerea ad costam nervosque impressos villosula aliter glabra, subtus concoloria ubique dense molliter velutino-pilosula, costa ut nervis valde elevatis, nervis lateralibus utroque latere circa 18 angulo fere recto divergentibus, venulis elevatis arcte reticulatis; paniculae magnae multiflorae pedunculatae foliis subaequilongae, ramis basalibus ramosis, superioribus simplicibus dense spiciformibus usque ad 6 cm. longis, rhachibus crassis sulcatis dense rufo-tomentosis, floribus brevissime pedicellatis, bracteis triangularibus pedicellis vix longioribus; sepala late ovalia apice rotundata 2.5 vel fere 3 mm. longa, extus dense minute adpresse sericeo-pilosula; petala ochroleuca sepalis vix longiora; stamina conspicue petalis longiora.—British Honduras: Temash River, in primary forest, alt. 60 meters, April 2, 1935, *W. A. Schipp* 1348 (Herb. Field Mus. No. 782,565, type).

Thinouia tomocarpa Standley, sp. nov.—Frutex scandens 18-metralis, ramis teretibus striatis, lenticellis parvis densiuscule conspersis, novellis minute puberulis cito glabratis; folia 3-foliolata longe petiolata, petiolulis 1–3 cm. longis; foliola ovata vel oblongo-ovata circa 11 cm. longa atque 6 cm. lata subcoriacea acuta, basi rotundata et saepe obliqua, integra vel remote grosse crenata, glabrata, subtus secus costam sparse barbata; flores subumbellati numerosi, umbellis longe pedunculatis, pedicellis gracilibus elongatis saepe fere 2 cm. longis puberulis; fructus magnus glaber lucidus graciliter 1 cm. longe stipitatus, basi acutus vel acutiusculus, 6–8 cm. longus prope apicem 4 cm. latus, apice truncatus vel latissime breviter excisus, loculis valde compressis laxe reticulato-venulosis.—British Honduras: Temash River, in primary forest, alt. 45 meters, February 6, 1935, *W. A. Schipp* 1336 (Herb. Field Mus. No. 782,557, type).

The genus has not been recorded previously for North America, the other species being South American. The British Honduras plant is noteworthy for its fruit, which looks as if the apex might have been cut off with shears. I have not found similar samaras among the other members of the genus, whose fruits are decidedly different in appearance.

FLACOURTIACEAE

Casearia belizensis Standley, sp. nov.—Arbor 12-metralis, trunco 25 cm. diam., ramis teretibus rimosis ferrugineis sparse minute pallido-lenticellatis, novellis minutissime puberulis, cito glabratis, internodiis brevibus; folia mediocria breviter petiolata crasse chartacea, petiolo crassiusculo 5–8 mm. longo glabrato; lamina anguste oblonga 6–14 cm. longa 2.5–4 cm. lata abrupte anguste obtuso-acuminata, basi valde obliqua rotundata vel subcordata, margine undique obscure sed regulariter adpresso-crenata, densissime pellucido-punctata, glabra, supra lucida in sicco fusco-viridis, venulis prominulis arcte reticulatis, subtus pallidior brunnescens, costa gracili elevata, nervis lateralibus utroque latere circa 10 arcuatis angulo semirecto adscendentibus, venulis prominulis arcte reticulatis; flores rosei ad axillas vel ad axillas defoliatas fasciculati numerosi, pedicellis gracillimis glabris ad 1 cm. longis; sepala ovalia glabra circa 2 mm. longa apice rotundata patentia vel reflexa; stamina 8 glabra, antheris oblongis 1 mm. longis; ovarium glabrum 2.5 mm. longum supra attenuatum, stylo brevi crasso.—British Honduras: Temash River, in broken ridge growth, alt. 30 meters, March 14, 1935, *W. A. Schipp* 1314 (Herb. Field Mus. No. 782,534, type).

MYRSINACEAE

Ardisia Schippii Standley, sp. nov.—Arbor 11-metralis, trunco 25 cm. diam., ramis crassiusculis teretibus vel subangulatis, novellis minute brunneo-puberulis; folia majuscula petiolata crasse chartacea, petiolo crasso anguste marginato 1.8–2.5 cm. longo glabrato; lamina oblongo-elliptica circa 16 cm. longa et 7–9 cm. lata, apice acutiuscula vel rotundata atque breviter apiculata, basi acuta vel subobtusa, prope basin integra, aliter undique crebre argute pectinato-denticulata, in statu adulto glabra vel glabrata, prope marginem dense glandulis magnis conspersa, supra viridis, costa subimpressa, subtus pallidior brunnescens, costa gracili elevata, nervis lateralibus utroque latere circa 10 gracillimis prominentibus fere rectis angulo latiusculo divergentibus; flores rosei racemosi, racemis brevibus paucifloris interdum corymbiformibus paniculatis, panicula foliis duplo breviore, rhachi angulata dense minute brunneo-tomentella, pedicellis puberulis ad 7 mm. longis crassiusculis; sepala oblongo-ovata 1.8 mm. longa obtusa scarioso-marginata grosse glanduloso-punctata ciliata; petala oblongo-lanceolata, acuta, 4 mm. longa punctata; ovarium globosum glabrum, in stylum gracilem glabrum 4–5 mm. longum abrupte contractum.—British Honduras: Temash River, in primary forest, alt. 60 meters, August 8, 1935, *W. A. Schipp* 1365 (Herb. Field Mus. No. 782,522, type).

LOGANIACEAE

Strychnos brachistantha Standley, sp. nov.—Frutex scandens 12-metralis, trunco 3.5 cm. diam., ramis teretibus striatis sparse lenticellatis ad nodos saepe spinis 2 crassis subrecurvis 5–7 mm. longis armatis, internodiis brevibus sparse puberulis vel fere omnino glabris;

folia parva breviter petiolata chartacea, petiolo gracili 3–4 mm. longo sparse puberulo vel glabro; lamina lanceolato-oblonga 2.5–4 cm. longa 1–1.5 cm. lata sensim anguste acuminata, basi rotundata vel obtusa, glabra triplinervia, supra in sicco fusco-viridis, costa impressa, subtus paullo pallidior undique minute flavo-puncticulata; cymae terminales parvae dense multiflorae rotundatae 1–1.5 cm. longae et aequilatae breviter pedunculatae ramulis sordide puberulis; sepala lanceolato-triangularia acuta vel acuminata 1 mm. longa glabrata; corolla ochroleuca 2 mm. longa extus minute puberula, tubo brevissimo, lobis oblongis obtusis intus dense villosis.—British Honduras: Temash River, in forest, alt. 30 meters, July 21, 1935, *W. A. Schipp* S899 (Herb. Field Mus. No. 782,517, type).

Remarkable among Central American species for the extremely small flowers, a character that may be matched, however, among some of the South American species of *Strychnos*.

GESNERIACEAE

Drymonia ochroleuca Standley, sp. nov.—Frutex parvus epiphyticus, ramis crassis ochraceis obtuse angulatis vel subteretibus; folia magna breviter petiolata tenuia, petiolo crassiusculo 2–5 cm. longo dense subadpresse piloso; lamina oblique oblongo-elliptica 22–27 cm. longa 10–12 cm. lata acuminata basi oblique obtusa vel subacuta, remote obscure undulato-dentata, supra in sicco viridis sparse pilis brevibus patentibus villosula, subtus pallidior, sparse, ad venas densius, pilis brevibus subadpressis griseis pilosula, costa crassiuscula prominente, nervis lateralibus utroque latere circa 7 gracillimis; flores fasciculati breviter pedicellati; sepala valde inaequalia foliacea ad 13 mm. longa oblonga vel oblongo-ovata profunde laciniato-dentata apice in mucronem ad 3 mm. longum filiformem desinentia, dentibus interdum filiformi-productis, sepalis ubique dense breviter pilosis; corolla ochroleuca 24 mm. longa extus dense breviter furfuraceo-pilosa, tubo supra sensim dilatato sub orem 7 mm. lato, lobis inaequalibus latissime rotundatis 2–3 mm. longis intus glabris.—British Honduras: Temash River, epiphytic in forest, alt. 60 meters, August 4, 1935, *W. A. Schipp* S901 (Herb. Field Mus. No. 782,546, type).

Known from only imperfect material, but not easily associable with other species known from the region of Central America.

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LOGWOOD TREES ALONG BELIZE RIVER

WEIGHING LOGWOOD AT BELIZE

AN OLD HONDURAS MAHOGANY TREE

RAFTING MAHOGANY LOGS DOWN NEW RIVER

SQUARING MAHOGANY LOGS FOR EXPORT

CEDAR TREE SURROUNDED BY COHUNE PALMS

STAND OF PINE IN STANN CREEK DISTRICT

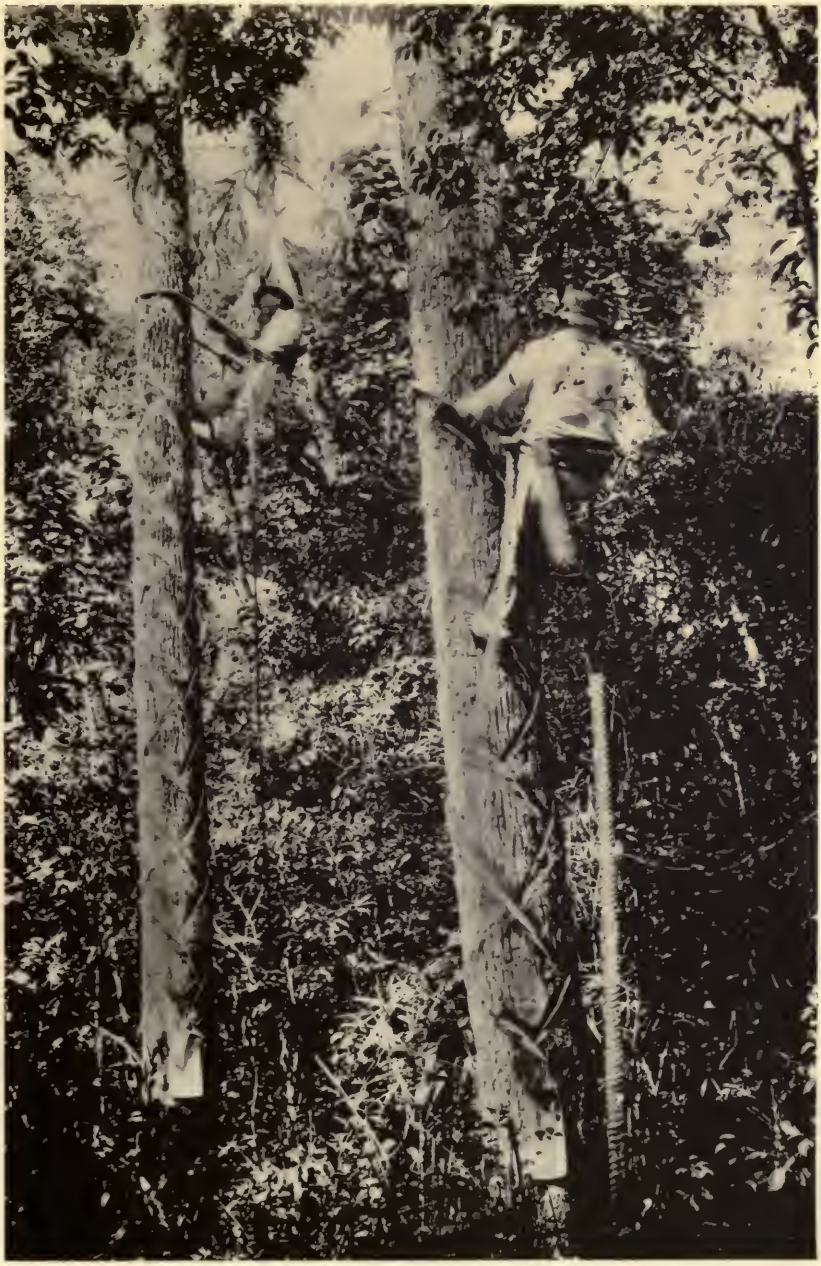
VIEW OF THE GREAT SOUTHERN PINE RIDGE

A TYPICAL BANAK TREE

THATCHING A NATIVE HUT WITH COHUNE PALM

SAPODILLA FOREST

PRIMARY INTERMEDIATE FOREST, WITH SAPODILLA TREE IN FOREGROUND



CHICLEROS TAPPING SAPODILLA TREES

SAPODILLA TREE WITH CHICLE BAG ATTACHED

COOKING SAPODILLA LATEX

KNEADING CHICLE GUM INTO BLOCKS

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